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THE JOURNAL OF LARYNGOLOGY.

Now that the great war has come to a successful termination and we are preparing for a renewal, and, indeed, for an increase in normal peace activities, the Editorial Committee of this JOURNAL has arranged several changes in our programme which we hope and expect will improve the standing and also the circulation of the JOURNAL.

To begin with, in response to a strongly-expressed desire, plans have been laid to make our Abstract columns a full and complete reflection of the world literature of our speciality. A list of the titles of all articles published elsewhere, bearing upon our regions, will be printed every month for the use of workers who may be interested in particular sections of the field, while at the same time representative abstracts of the more important articles will appear, very much as at present in style, but, it is hoped, on a larger and more representative scale.

In order that this department of the work may be kept up to date the Editor and the Editorial Committee agreed that it should be placed under the special charge of an Abstracts Editor, and they have much pleasure in intimating that Mr. W. D. Harmer, whose excellent work as Secretary of the Section of Laryngology at the International Congress of 1913 is still fresh in our minds, has kindly consented to undertake this responsible duty.

The Editorial Committee desire it to be known that authors of articles are invited to send to the JOURNAL copies of any of their articles which may have appeared elsewhere, in home or foreign journals, for abstracting purposes, and if they prefer to make their own abstracts the Editorial Staff will be only too pleased to make use of them.

While so much attention is being paid to the abstracting side of our work we are also anxious to encourage as much as possible what has hitherto been the weak part of our activities, and that is the production of original papers and articles.

Prior to the war our scientific activity, measured, as it may justly be,

by the amount of published works, was by no means commensurate either with the importance of our speciality or with the rich opportunities at our disposal.

At the present time, however, there are strong indications visible of the rise of a new and energetic spirit in our countries, and we may look forward with hope and high confidence to our speciality sharing in the new life that is rising to flood all departments of national activity, and it is intended that the JOURNAL OF LARYNGOLOGY will provide for all workers in our speciality a means of publicity at once easily accessible and popular.

Easily accessible. Because we wish to emphasise the fact that we represent no particular school, or clique, or style, or opinion. These columns are open to all who have anything to say that may seem to them to be of value or of interest to their fellow-practitioners, and we call upon all such to lend a hand to make the JOURNAL as broadly representative of British Oto-Laryngology as they can, in order to sustain and to enhance the high standing we have already been successful in reaching in our special department of medicine.

WARFARE INJURIES OF THE LARYNX.¹

BY W. DOUGLAS HARMER, M.C.CANTAB., F.R.C.S.ENG.

MR. PRESIDENT,—I must thank the Council for honouring me with the invitation to open the discussion on this subject.

In the following paper I have thought it wise to confine my remarks to the description of gun-shot wounds of the larynx, these cases forming a large and important group in military surgery.

To obtain the necessary information investigations have been carried out on wide lines and 245 patients have been discovered, including:

GROUP I.—108 cases, particulars of which have been obtained partly by personal observations (24), and partly as the result of circulating a letter to 80 laryngologists in Great Britain and France, notes having been received from—Brown Kelly 18, Howarth 6, Rose 4, Tilley 4, E. D. D. Davies 4, Whale 4, Milligan 3, Mollison 3, Smurthwaite 3, Abercrombie, StClair Thomson, Seymour Jones, Hastings, Wilkinson, Graham, O'Malley, Wylie, and West 2 each, MacGregor, Westmacott, Wright, Peters, Buckland Jones, Dundas Grant, French, Hill, Hutchinson, Low, Bain, Whillis, Faulder, Tod, Stewart, and Woods 1 each.

GROUP II.—110 cases, the notes of which were obtained by examining the records of 1873 patients suffering from gun-shot wounds of the neck and treated in home hospitals during 1914 and 1915. These notes were largely valueless because of the absence of accurate details, but the investigations brought out the relative frequency of injuries of the larynx in neck wounds (1 in 17 cases). Moure states that in the Crimean War the proportion was 1 in 460. Delorme gives 3 per cent. in the present war.

GROUP III.—23 *post-mortem* specimens obtained from the Royal College of Surgeons, a selection of which has been exhibited to-day. Also 4 fatal cases, notes of which were supplied by Capt. Whale.

Although these groups only include a fair proportion of the larynx

¹ Introductory paper to a discussion on "Warfare Injuries of the Upper Air Passages," read before the Laryngological Section of the Royal Society of Medicine, June 7th, 1918.

wounds received during this war, the numbers are sufficient to make it possible to formulate a good general impression of the whole subject. It has been noted that wounds of the larynx are infinitely rarer than injuries to the jaws; that the entry wound may be situated in any part of the neck (jaw and chest rare), and is generally smaller than the exit injury, that the commonest place of entry is the anterior triangle of the neck, especially the region of the thyroid cartilage; that transverse wounds (61) are more common than oblique (24); that entry wounds in the middle line in front are very rare (8), and never occur posteriorly, doubtless, because the spine is always involved with fatal results; that the track of the missile may be horizontal, from above downwards or occasionally from below upwards; that the lower jaw may be struck first; that injuries of the larynx between the level of the vocal cords and the cricoid are the most serious; that tracheal wounds are rare (12); that the pharynx or œsophagus is often included; that extralaryngeal wounds are very common on account of the mobility of the air-passages, the missile often passing obliquely by the side of the thyroid cartilage or transversely behind the larynx without penetrating into its cavity.

NATURE OF WOUNDS.

All varieties have been met with from simple punctures to highly lacerated forms, perforating being far more common than penetrating. Out of 108 cases the wounds were stated to have been caused by bullets in 58, shrapnel in 20, shell fragments in 16, bayonet in 1, not stated in 13 cases. The course was left to right in 26, right to left in 18, right only in 13, left only in 12, middle line 5. Although no evidence has been obtained from these notes that one form of missile is more destructive than any other, the high proportion of bullet wounds suggests that these cause lighter injuries than ragged fragments of shell. In the case of bullets many factors are important. Thus, in the Bradshaw lecture on "Wounds in the War," Bowlby has drawn attention to the facts that "a pointed bullet is easily turned completely over on its axis, and may strike a bone sideways or base first; that the entry wound is generally small, the exit ragged and large; that the bullet may shatter a bone and impart its momentum to the fragments, and that the main injury of the parts is due to the divulsive or expanding nature of the missile, the tissues being torn asunder from within rather than from without, the injury being partly due to the wave of compressed air driven in front of the bullet, and its effect spreading far from the obvious track of the missile."

Cases have been reported of extensive laceration of the brain caused by bullets passing outside the skull without fracture of the cranium, of injury to the lungs with extra thoracic wounds, and of rupture of the colon due to non-penetrating wounds of the abdominal wall. In general, a bullet fired at short range is more destructive than after a long flight. In the former the missile is wobbling, whereas in the latter the course is steadier, and the larynx may be pierced so neatly that it is impossible to detect any injury. The passage through the neck of bullets passing in intimate relation to vital structures without causing serious damage must be emphasised. Many instances could be cited, such as two cases where bullets entered the neck in the middle line in front of the thyroid cartilage and emerged posteriorly to the left of the dorsal vertebrae at

the level of the spines of the scapulae, in the notes of which it was stated that these bullets took an extraordinary course, and apparently no important injuries were sustained.

In a third case, a missile is stated to have passed through the trachea and oesophagus and lodged in the apex of the right lung, causing aphonia, dysphagia, and emphysema, the patient, however, making an uninterrupted recovery. As Moure says, "Missiles passing transversely frequently dissect their way through the neck better than the most skilful surgeon." On the other hand, the specimens in the Royal College of Surgeons demonstrate how the larynx may be shattered so that wounds seen on the battle field are often much more severe than those which arrive in our hospitals.

The healing of wounds in the larynx is, generally speaking, rapid and satisfactory—the fact that a considerable number afterwards develop cheloid or scar-tissue approaching to this condition raises the important question of the nature of the infection. There can be little doubt that a definite organism must be responsible, otherwise it is impossible to explain why, in one case the healing of the tissues is so perfect that no sign of injury in the larynx can be seen, whereas in a second there is not only inflammation, but a definite formation of scar tissue resulting in stenosis of the lumen.

SYMPTOMS.

In many of the cases examined the classical symptoms were remarkable by their absence. Although missiles had undoubtedly perforated the air passages, the patients declared that very little trouble had been experienced. Cough, dyspnoea, blood-spitting, dysphagia, and, later, bruising, oedema or inflammation may never occur. In general, however, the voice is immediately lost. Cough supervenes for a time. Hæmoptysis (25 cases) is common and may be severe, statements being made by the patients that they had lost "at least two quarts of blood" after being wounded. Severe bleeding may be due to injury of the carotid arteries (3) or internal jugular vein (2). It may also originate from the mucosa of the air-passages without injury to any large vessel. Hæmorrhage may continue for a few minutes or for long periods, such as two to seven days. Recurrent and secondary hæmorrhages are rare at the base. Dysphagia (29 cases) is common, but generally of a transient nature for a day or two, and is caused more often by general soreness of the tissues than by obstructive inflammation in the gullet. Even after severe wounds involving the food passages there may be no dysphagia. Thus, a bullet which passed through the pharynx behind the larynx is said to have caused no dyspnoea, dysphagia, or hæmoptysis. Dyspnoea (28 cases, tracheotomy in 18) seems very variable, and is often absent even in severe wounds. Whale reports a fatal case caused by a shrapnel bullet which shattered the lower jaw, the hyoid bone, and traversed the right ventricle of the larynx. Several patients were able to walk to a dressing-station, although wounded severely in the larynx. A word of caution is necessary, however, for dyspnoea may develop unexpectedly even after apparently simple injuries and at almost any period. Richard reports a case which died of dyspnoea on the second day as the result of being left without an attendant. Another case is recorded as having died of sudden dyspnoea and heart failure before relief could be afforded. Two more patients required emergency tracheotomies in

camp after returning to duty. Emphysema (four cases) is mentioned rarely, and gives rise to so little trouble that the condition is seldom noted. Slight degrees are probably common, and occasionally the whole neck and face may be swollen.

INJURIES.

Laryngeal.—To estimate exactly the damage sustained by the framework of the larynx is often a very difficult matter, and apparently slight injury may afterwards prove to be serious. A methodical examination is necessary, including inspection, palpation, X rays, and, in some cases, direct laryngoscopy. The epiglottis (8 cases) may be shot away, partially removed, detached from its origin, or simply perforated. The hyoid bone (4 cases) may also be fractured. The thyroid cartilage (10 cases) is often involved. In most cases that reach this country the missile has perforated the cartilage without causing serious injury, its course having been roughly transverse and generally through the anterior parts of the larynx. Wounds through the posterior regions involving the arytenoids and pharynx are far more serious. With shell fragments penetrating wounds are also frequent, and the foreign body may cause an abscess and be coughed up later. Definite fractures of the cartilage were observed in 10 cases, simple and comminuted forms being equally common. *Post-mortem* specimens show every variety of fractures, including those in which the cartilages are broken into many fragments. Instances have been seen in France where the entire larynx has been shot away, but more often the anterior angle of the thyroid cartilage is removed.

The cricoid may also be fractured or perforated, serious complications supervening. One or other arytenoid is often involved and fixation of the crico-arytenoid joint may result. Considerable confusion obviously exists between fixation of this joint and cord-paralysis, and in some instances it may be difficult to decide which is present. In most cases of paralysis the arytenoid is drawn forward on the affected side, a condition which has not been seen with simple fixation.

In all wounds of the cartilages perichondritis supervenes to some extent and healing is thereby delayed. In the more favourable cases the inflammation rapidly subsides and the patient may be fit for duty in ten to fourteen days. Severe perichondritis is much to be feared and causes results which recover but slowly.

Soft Parts.—The vocal cords are frequently injured, especially in their anterior parts, where scarring generally leads to the formation of a web. Slight damage is quickly repaired, but extensive wounds result in a condition which is very similar to that seen after removal of cancer by thyrotomy.

The ventricular bands if wounded may become so swollen that the lumen of the larynx between them is reduced to a slit, this form of stenosis being frequently persistent. *Hæmatoma* (2 cases) rarely causes obstruction, although fairly large effusions are occasionally observed. *Granulomata* (7 cases) appear after acute inflammation has subsided and are generally situated on the cords or below the larynx around the tracheotomy tube. *Abscess* may develop externally or within the larynx, especially when a foreign body is retained. If the abscess bursts internally the foreign body is often coughed up (7 cases), after which the inflammation may rapidly subside. Peritracheal and peri-

œsophageal abscesses are not uncommon, and the necessity for tracheotomy must always be borne in mind. *Fistulae* may result from wounds or abscesses, but in most instances rapidly close. Wylie reports an instance of a persistent fistula which he explored and found to contain a part of a coat collar, which, being soft, had not been detected by probing. As usual, the fistula closed after its removal.

Nerves.—The frequency of paralysis of the vocal cords after gunshot wounds of the neck is very remarkable. Appearing immediately after the wound, it is generally abductor in type in the early stages. Left abductor paralysis was noted in 22 cases, the right cord being affected in 14, and both cords in 2, giving a total of 38 out of 108 cases. In several instances the paralysis disappeared after a time, in others it was followed by total paralysis. It has not been found possible to determine the frequency of these changes because the notes are not sufficiently detailed and much confusion exists between fixation in the middle line, ankylosis of the arytaenoid joint, and "cadaveric position of the cord."

Paralysis might be caused by division of the recurrent laryngeal nerve,¹ by its involvement in scar tissue, by shock, by toxæmia, or might be idiopathic. It is important to determine which of the above is responsible. So far, no instance of divided nerve has been reported. The paralysis seems to supervene too early for scar tissue or toxæmia to have influenced the nerves. There can be little doubt that shock is chiefly responsible, for the following reasons:

(1) The large number of cases reported. Considering the deep position of the recurrent nerves, it is inconceivable that they could be injured directly in so high a percentage of cases. As stated above, structures far removed from the course of the missile are often damaged. This occurred in many of the patients suffering from laryngeal paralysis. Körner quotes a case of a subcutaneous glancing wound injuring the right half of the thyroid cartilage, which, without penetrating the larynx, caused a lasting fixation of the right vocal cord in the middle line (entry, below right lower jaw: exit, right of seventh cervical spine). As he remarks, "An isolated injury to the vagus nerve so high up without injury to the carotid vessels and other neighbouring cranial nerves is out of the question."

(2) Paralysis of other cervical nerves (excluding brachial plexus) are comparatively rare. Thus, the internal laryngeal nerve is mentioned twice, the external laryngeal, the vagus,² spinal accessory, sympathetic, hypoglossal, once each. Mollison had an interesting case of injury to ninth, eleventh, and twelfth nerves, and in wounds high in the neck the tenth, eleventh, and twelfth nerves are occasionally involved.

(3) Two cases of paralysis of the left recurrent nerve, caused by a bullet and a fragment of shell respectively entering through the chest wall and becoming impacted in the arch of the aorta, are reported by Abercrombie and Mollison.

(4) Two cases of double abductor paralysis have been discovered (Moure quotes another of uncertain origin).

(5) In other parts of the body operations are frequently undertaken to release nerves from scars, but Körner alone seems to have

¹ Vagus paralysis and central lesions are very rare.

² Moure has seen eight cases of paralysis of vago spinal.

attempted this on the neck. He exposed the right facial, vagus, spinal accessory, and hypoglossal nerves, and found them involved in scar tissue (not divided). Six weeks later improvement was noted in the spinal accessory and vagus; palate and larynx unchanged.

(6) Other nerves are known to be paralysed by shock. Thus, a doctor consulted me about weakness of the hand which appeared three days after a side-slip from a bicycle. He stated that he had fallen lightly on the palm of his hand without bruising the tissues or straining his wrist in any way. Examination showed wasting of the muscles of the thenar eminence. He was sent to the late Dr. Lewis Jones, who reported complete R.D. in the median nerve below the wrist, adding: "This is a typical instance of shock paralysis, and will almost certainly recover." This occurred in six months. It is interesting to note that abductor paralysis after war injuries may also recover.

(7) Paralysis of the recurrent has occurred several times after ligation of carotid aneurysms, and is well known in many other operations on the neck.

(8) Paralysis of the brachial plexus is common after wounds of the neck, and all its trunks are generally involved rather than one, as would occur if a direct injury were responsible. It would seem that damage to cervical nerves was dependent more on the degree of their fixation than upon their position in the neck, and the fact that the recurrents wind round the aorta and subclavian respectively may prevent them from being easily displaced, although the larynx has been deflected strongly at the moment that it was struck by the bullet.

Stenosis (44 cases), *Inflammatory*.—This is common in early stages, and may be due to general inflammation of the mucosa, to oedema, to abscess, or to hamatoma. It often happens that the ventricular bands are so swollen that they meet in the middle line and occlude the vocal cords, especially when perichondritis is also present or when crico-tracheotomy has been performed. (See below.)

Cicatricial, at Level of Vocal Cords.—A common form is webbing of the anterior commissure (10 cases) which is not so serious as the annular and tubular varieties (11 cases). In the latter the scar tissue may involve a considerable length of the air-passage, including the subglottic space. The scar is remarkably tough, and cuts more like gristle than fibrous tissue. In many instances the lumen of the larynx is almost obliterated.

Subglottic Stenosis (9 cases) is equally difficult to overcome.

Tracheal (2 cases) and *paralytic strictures* (3 cases) are rarer.

Dilated Glottis.—Brown Kelly reports an interesting case resulting in dilated glottis. "The bullet entered the larynx above the anterior half of the left vocal cord and escaped at the anterior commissure, causing damage chiefly in these situations. The right ventricular band was swollen until an abscess was opened. Later it subsided, and when the patient was seen six weeks later the anterior angle of the glottis formed a right angle, so that on phonation a large gap remained posteriorly. The right vocal cord and arytenoid moved well, but the left cord was motionless."

A slight degree of bowing of the vocal cords is common. Seymour Jones reports a case in which a fragment of shrapnel traversed the

crico-thyroid space and wounded the crico-thyroid muscles and probably the external laryngeal nerves, a rough voice resulting on account of the difficulty of tensing the vocal cords.

Injuries to Pharynx.—Many laryngeal injuries are complicated by simple perforating wounds of the pharynx, resulting in temporary fistulae (6 cases). Severe wounds are rarely seen in England. The evidence of surgeons at the Front demonstrates that severe injury of the pharynx is a serious complication, and often produces a fatal result.

Injuries to Esophagus.—The cervical portion of the œsophagus is often perforated, and in some cases temporary fistulae result (10 cases). In most instances dysphagia is of short duration, and the absence of complications is remarkable. Cellulitis of the neck, periesophageal abscess, and cervical sinuses may supervene, but are rarely fatal. Temporary dilatation of the gullet has been necessary in several cases, but only one instance of a permanent stenosis has been discovered.

Injury to Trachea.—Foreign bodies may traverse the trachea without causing serious damage, though, in most instances, a tracheal fistula remains for a time. Severe wounds are likely to be fatal unless early treatment can be afforded. Moure reports a case in which a fragment of a hand-grenade entering the neck divided the right internal carotid artery, injured the vagus, spinal accessory, and hypoglossal nerves, and finally impacted itself in the right bronchus, from which it was removed seven weeks later by bronchoscopy. Recovery.

Injury to Vessels.—Definite injury to the carotid arteries is reported in three cases, and to the internal jugular vein only twice. A transverse section of the neck shows that the large vessels lie entirely behind the larynx, and are so deeply situated that they generally escape in these wounds. Reference has already been made to the remarkable immunity of the vital structures of the neck, but it is fair to assume that most of the wounds of the large vessels end fatally.

Complications are always to be feared in the early stages, even after apparently simple wounds of the air-passages, as they frequently terminate fatally (see causes of death). Chronic conditions, such as bronchitis, are only mentioned in five cases, and all late complications appear to be rare. One patient developed tetanus on the tenth day but recovered.

TREATMENT.

The treatment of wounds of the larynx is a difficult matter, and great ingenuity is needed in the management of many of the cases. If centres were provided for dealing with these patients they would enable the surgeons to improve their technique. In the early stages the first essential is to prevent the patient from choking. In all doubtful cases tracheotomy should be performed. Nearly one-third of the cases reported required a tube at some period (tracheotomy, 28 cases; laryngotomy, 4 cases). Crico-tracheotomy is an easy operation, but inadvisable because the larynx is narrower than the trachea: the tube is not well tolerated. Swelling of the mucosa results, pressure ulcers, necrosis of the cricoid, and granulations supervene: "retained tube" is more common than with other operations. "High" tracheotomy through the upper two or three rings is less dangerous than a "low" operation. As Kocher states: "The danger of fatal complications is much greater with inferior tracheotomy." The latter should be reserved for those cases where, after careful consideration, it is decided

that a permanent tube shall be worn. The treatment of the wound is also very important. To prevent extension of sepsis it may be necessary to open up the wound and provide free drainage: excision of any lacerated tissues is better. The suturing together of divided air- or food-passages must be carried out on the well-known lines prescribed for cut-throat. To save life partial or total extirpation of a larynx which has been shattered might be necessary. The evidence shows that a gangrenous condition of the tissues often results in death.

Foreign bodies should be removed in all possible cases after careful localisation with radiography.

The later treatment should only be carried out by laryngologists. The question of warmth, moisture, inhalations, management of the tracheotomy tube, prevention of dyspnoea, and the feeding are all highly important to recovery.

Stenosis.—Tracheotomy may be necessary in any form of stenosis. As Moure says: "Nearly all cases have perichondritis at first, some destruction of cartilage, others lesions of the arytenoid joints (serious complications), others injuries to the pharynx or œsophagus." It is important to recognise that inflammatory stenosis may disappear entirely. In several patients examined the earlier notes (made by well-known laryngologists) stated that permanent tubes would be necessary unless laryngostomies were performed. A year later they were breathing normally without tubes.

When the patient has recovered from his tracheotomy, the treatment of his stenosis must be considered. To lay down any general line of treatment is impossible. One must devise a method which will not only dilate the stricture, but, if possible, also cause absorption of the scar-tissue. Simple dilatation is only practical in a few cases. Removal of scars is useless unless intubation is employed for months.

Moure and other Continental surgeons are strongly in favour of laryngostomy ("le traitement moderne, le traitement de choix"), and, shortly, his method consists in splitting the larynx and trachea, resecting all scar tissue so that the cavity of the larynx is dilated and canalised. The normal structures are often unrecognisable, and care must be taken to avoid injury of the œsophagus and removal of the ventricular bands, if possible. As there is a danger of hæmorrhage he recommends cauterisation of the bleeding-points. In one case the patient filled a large bowl with blood, which was surprising, considering that the hæmorrhage must have come from unimportant vessels. The larynx is plugged by a gauze roll ("pansement en panier") containing an antiseptic. This dressing is changed every three or four days and replaced after three or four weeks by a special vulcanite tube and canula or by an intubation tube fixed by a special clip ("Crête d'Aluminium"). Granulations are treated with chloride of zinc (10 per cent.) or silver nitrate. In some cases an œsophageal tube is used for feeding for a few days. Intubation requires from twelve to eighteen months, after which the canula can generally be removed, and to close the fistula a plastic operation similar to that used for hypospadias is performed. A second laryngostomy is sometimes necessary. He points out that warfare injuries are infinitely more difficult to handle than ordinary civil cases of stenosis and that fixation of the arytenoid joints increases the trouble.

The complications which he has experienced are inflammation, œdema, abscess, and necrosis of the cartilages of the trachea (once).

The voice results are surprisingly good, and although rough, phonation is strong and resonant, similar to that obtained after removal of cancers by thyrotomy. Moreover, the patients are cured and can breathe through the natural passages (Has treated sixteen soldiers and fifteen civilians "avec plein succès").

Now, in the hands of Prof. Moure, laryngo-tracheotomy doubtless gives good results, but it is not an operation to be undertaken lightly by laryngologists. I agree that in every case of "retained tube" the question of curing the stenosis should be carefully considered, and it still remains to be proved that this cannot be effected equally well by simpler methods. In any case, the early performance of laryngostomy is unwise, and long periods must be allowed to elapse so that general inflammation can subside. If necessary, a low tracheotomy should be performed to prevent the affected part being irritated by the tube. Some degree of fibrous scarring will supervene after all severe infections of the larynx, and it is possible that this can be prevented to some extent by early treatment with radium and X rays, as these have been shown to be effective in the treatment of cheloid. Recently, Pinch has treated several patients at the Radium Institute, and it will be interesting to note the effects obtained. The reaction obtained by rays is sometimes considerable, and in patients without a tracheotomy tube care must be taken not to produce too great a swelling in the stricture.

To maintain the lumen of the air-passage it is necessary to persevere with dilatation by bougies, intubation tubes or upward turning tracheotomy tubes, of which a selection is shown. The treatment must be commenced very quietly, as the tissues are often intolerant when inflamed. Small-sized stenosis canulae are generally effective, and should not be changed too often. If necessary a general anæsthetic should be given for changing the plug at the beginning of the course. After a time a larger cannula can nearly always be inserted without damage to the stricture, and if the surgeon and the patient are sufficiently tolerant many cases of stenosis can be cured. My opinion is that laryngostomy should be reserved for the most severe injuries which have resulted in practical obliteration of the lumen of the larynx. There remains the difficult question as to when it is safe to discontinue the tube. The patient should wear a tube corked for months before it is finally removed. The symptoms should be carefully watched to make sure that the patient is not suffering from air-hunger, breathlessness, and the like. Some men complain of feeling blown-up if the cork is not removed from time to time.

MORTALITY.

The mortality from wounds of the larynx is undoubtedly high, and depends on a number of factors. In the firing line extensive wounds may be caused by large shell fragments, which destroy the larynx and are rapidly fatal. At the base hospitals in France many deaths occur in the first week after injuries. This is proved by the specimens in the Royal College of Surgeons, and by an examination of the notes at the Statistical Department of the British Museum. Thus, in 512 cases of neck wounds, mostly treated in France, there were 31 deaths, 2 of which had received injuries to the larynx. On the other hand, 1873 neck wounds were treated in English hospitals during the same period with only 17 deaths. Of these 110 received injuries to the larynx and only

1 case ended fatally. Again, in the group of 108 patients which have been described in detail above, there were only 5 deaths, which gives a mortality, after the first week, of less than 5 per cent.

The above figures are important in proving that the mortality is much greater at the Front than at the base.

Causes of Death.—In the 1873 plus 512 cases of neck wounds mentioned above, the causes of death were given as follows: Fracture of spine and paralysis 16, hæmorrhage 7, aneurysm 2, broncho-pneumonia 2, gangrene 2, pneumo-hæmothorax 1, dyspnœa and heart failure 1, septicæmia 1, mediastinitis 1, no cause stated 14. Total 47.

In the 32 cases of fatal larynx wounds, deaths were due to sepsis of neck, mediastinum, and broncho-pneumonia in 9, hæmorrhage in 5, pneumonia in 3, meningitis in 2, mediastinitis, hæmothorax, pericarditis, œdema of larynx, tracheotomy and heart failure, cellulitis of neck, septicæmia and cerebral embolus in 1 case each (5 not stated). In 17 of the above cases death occurred within seven days (6 within twenty-four hours), and it would appear that the commonest causes of death in the early stages were hæmorrhage and dyspnœa, whereas later on inflammation of the neck extending to chest and involving the lungs is most important. To prevent broncho-pneumonia, Richard suggests that in all grave wounds laryngostomy should be performed and the air-passages plugged above the tube.

AFTER RESULTS.

In two-thirds of the gun-shot injuries of the larynx that survive for more than a week recovery is complete, and no ill-effects are produced beyond alteration of the voice.¹

The voice figures obtained in 108 cases are normal 17, strong hoarse 24, weak hoarse 12, falsetto 1, whisper 15, dumb 1, not stated 38. Although a perfectly normal phonation may be obtained after undoubted injury to the larynx it is common to find that the patient complains that his voice is easily tired. Examination of many of these cases, and of others suffering from hoarseness, has shown that faulty voice production is often responsible. Officers, as a rule, obtain a useful voice more quickly than men. But the result is variable after the same type of injury. Thus in 10 cases of webbing of the anterior commissure the voice was reported strong hoarse in 3, weak hoarse in 3, falsetto in 1, whisper in 2, and dumb in 1. This question will be dealt with by Capt. Smurthwaite and need not be elaborated, but a word may be added about the mentality of these patients. In general, as soon as the wound has healed there appears to be no anxiety about the future even if a tracheotomy tube is retained. A small proportion of the patients do suffer from mental depression, and drift into a condition which is hopeless and helpless. They complain of breathlessness on exertion, air hunger, inability to lie down at night, or to undertake work in any form. They become neurasthenics. In one instance the patient committed suicide by cutting his throat after he had recovered.

As regards paralysis there is evidence to show that a small pro-

¹ As Prof. Körner says in commenting on one of his cases: "Nothing which the experience of previous wars would have led us to expect as the inevitable result of such an injury was present; no great hæmorrhage, no extensive destruction of cartilage, no dangerous œdema. Prophylactic tracheotomy, which was formerly so strongly advocated, was not carried out, and the result showed that in this case it would have been superfluous."

portion of the cases of abductor paralysis recover. Moure quotes a case in which the paralysis disappeared after the evacuation of a periesophageal abscess through the pharynx. Körner also has seen recovery of abductor paralysis. On the contrary, in a small number of patients total paralysis supervenes.

In conclusion, it should be emphasised that, although the majority of larynx wounds recover after a time, one-third of the patients are less fortunate, and in battle many lives are undoubtedly lost owing to wounds of the neck and larynx. Even the survivors may be crippled by complications, such as paralysis of the brachial plexus, bronchitis, loss of voice, and injury to health.

For these it behoves us to improve our methods of treatment, and, if possible, to prevent the occurrence of the wounds. Considering that the uniform of a soldier at the Front includes a collar reaching to the jaw, one naturally thinks that it would be a simple matter to insert in it a band of steel which would have the same effect as a helmet. It is for our military authorities to decide whether a steel collar would be practical or not.

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WAR NEUROSES OF THE LARYNX AND SPEECH MECHANISM.¹

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THIS war has produced a very big crop of maladies of psychogenic origin, and the number in which the larynx and speech mechanism is involved is not a few. The consideration of their course, treatment, and ultimate recovery makes a very interesting subject in psychology, not to mention the anatomy and physiology of the larynx and the part these play in voice production.

I have, during the last two years, had plenty of material for studying these very interesting forms of war neuroses. Previous to the war a case of functional aphonia in a man was a *rara avis*. Of course, we have to realise that never before was man submitted to such mind-racking conditions, and that those who are at all inclined to an instability of the nervous or mental system are found out under these conditions, and succumb to a breakdown in one form or another in that mechanism.

My experience has been gleaned from some 260 odd cases. These I will classify as follows:

Absolute mutism	13
Aphonia	239
Stammering or stuttering	10

The majority of these cases had had the disability for a period varying from three months to two years.

Probably by far the biggest number of men who lose their voice or speech at the Front from shell- or gas-shock, have it restored in the course of a few days at a base hospital by various methods, viz. electricity, etc., or it returns suddenly without any treatment but rest.

This class I pass by, and wish to discuss only those of longer standing; those who, in spite of time and various treatment, still maintain more or less silence and are sent back to England.

Granted that a number are due to a primary laryngitis consequent on the irritation of the obnoxious gas, there are, however, a large number who have lost their voice from pure shock—a reflex action of the gas causing laryngeal spasm. This persists in these psychogenic cases for month after month, until some stimulation—mental or otherwise—removes it.

The varieties one meets are:

(1) The dumb, who are, as a rule, listless, depressed, expressionless, some showing signs of nervous exhaustion in tremors generalised or confined to one or other limb, etc., others, unable to walk or even stand erect, from chronic spasms.

(2) The voiceless—speak in whisper of varying degree or in a falsetto or juvenile voice.

(3) The stammerer and stutterer.

(4) The malingerer.

Whereas most of the aphonic cases I have had attribute their loss of voice to having been "gassed," the dumb cases were due to their pro-

¹ Read before the Laryngological Section, Royal Society of Medicine. Introductory paper to discussion on "Warfare Injuries of the Upper Air Passages." June 7th, 1918.

pinquity to bursting shells of high explosives, some of them being buried under *débris* or blown some distance, though none of them showing any bodily injury.

My experience in stammering and stuttering cases has been mostly in those I have had under treatment for mutism, who, having regained their speech, invariably passed through a period of a few days' stuttering or stammering, but by dint of perseverance in treatment ultimately obtained normal speech.

It is needless for me to say much with regard to diagnosis, but there are one or two points I would like to raise so as to stimulate the discussion to follow my remarks.

Now, in regard to laryngeal paralysis, you, I think, will concede that, as a general rule, in patients unable to cough or speak we shall find some organic lesion, nerve or otherwise. On the other hand, if a case is unable to phonate, but can nevertheless cough normally, we are dealing with some form of adductor paresis, and that this condition is, as a rule, functional.

In these functional cases, I find there are four distinct recognisable variations in the position of the cords on attempted phonation:

- (1) Cords elliptical. Thyro-arytenoideus internus paresis.
- (2) Cords can be freely abducted, but there is no attempt at adduction: the cords lie more or less in cadaveric position.
- (3) Both true and false cords tightly pressed together: in fact, there is a spasm of adductor and constrictor muscles of larynx.
- (4) Cords approximate in anterior two-thirds, triangular space in posterior one-third—paresis of inter-arytenoideus. False cords meet in middle line due to air distension of ventricles from upward air-pressure, the exit being more or less blocked by resisting cords.

When there is no organic mischief to account for the loss of voice, and the patient can freely abduct the cords, but on attempting the vowel "a," pronounced "ah," brings the cords in any of these positions, we can be more or less certain the case is functional. Of course, there is always the possibility of early tuberculosis, causing myopathic paresis, and we have to exclude this.

The best vowel for getting the initial musical sound is undoubtedly "a," pronounced "ah." It is the most natural, requires the least effort, the position of the mouth, tongue, etc., being most favourable for a clear, free note.

POSITION OF THE VOCAL CORDS FOR PERFECT PHONATION.

For phonation we must have the cords more or less closed, offering a resistance to the force of expired air—necessary for setting them in vibration.

When expired air passes through the fissure formed by the vocal cords, the clearness of the sound or note is in proportion to the size of the fissure, and its intensity to the power of the blast of air generated by the various expiratory muscles.

If we are to get a perfect vibration of the cords their resistance must equally balance the upward pressure of expired air. In fact, phonation and speech are a matter of pressure and resistance. Pressure being air in motion (breath), resistance being the obstruction of the elastic vocal cords.

Again, if we look at the diagram on the screen we can see how our

alphabet is formed. If we remove by will the pressure at certain parts in the upper respiratory tract we produce the various consonants. It is only when we reach the larynx and by releasing the resistance there that we get vocal utterance, in contrast to whispered articulation—that is, we find the same power of obstruction: but which, if rightly released, causes continuous vibration—in effect, true musical sound.

That the false cords and ventricles play a great part in voice production there can be no doubt. Whilst examining so many of these aphonic cases I have noted how very often the false cords are forced together, especially in classes (3) and (4)—that is, they come very prominently into play as soon as the true cords offer excessive resistance to the upward pressure of air. Thus, the ventricles becoming distended with air, the laryngeal surfaces come forcibly together, increasing the closure of the glottis and adversely affecting the true vibration of the cords.

Of course, we know for phonation the upward air-blast must be under pressure. Now, in these cases the pressure of resistance is too great, for we see the cords being adducted forcibly in the closest contact, the result being a noise on attempted phonation in contrast to a musical sound.

ETIOLOGY.

Many of these patients tell me they still feel the same tightness in the throat which had its advent at the time of the "gassing," yet this entirely disappears after restoration of the voice: we have, in fact, removed the mental image of the former shock.

To appreciate the influence of the mind in the various bodily functions, one must realise how the feelings act upon the body, causing the different functional troubles.

Here I need only mention emotion—emotional fatigue, fear, etc.

There is no doubt that the feeling of inability to breathe caused by the effect of the poisonous gas produces fear, and this, in turn, violent emotion in these cases. The choking sensation is so great that they lose their voices; this sensation persists and is only a state of mental image. Thus we explain the many facts of pain persisting long after an old and complete cure of local effect.

It likewise explains the often magical effect of persuasion and suggestion methods.

There is no doubt that the mental and physical over-exertion prepare a soil in the patient for the final shock which produces fright and anxiety—an emotional neurosis in the form of aphonia.

TREATMENT.

This I will deal with under two headings:

- (1) Moral.
- (2) Physical.

Moral.

Of the two I would say the moral treatment is by far the more important.

We have to consider that the subject has lost his will-power and confidence, or, at least, the will to make the initiatory effort to phonate, and it is up to us to restore this power by the force of our own energy and will to make this effort.

I find I have much more control over the patient if I have him alone in the room; there is then no extraneous circumstance to distract his or my thoughts; thus one's own mind and that of the patient's can be absolutely concentrated on the treatment.

It is needless to say we must have accuracy in our diagnosis before we commence our treatment. Satisfy ourselves that there is no organic mischief in the larynx to account for the loss of the voice. One must always remember that a slight myopathic paresis may be the harbinger of early tuberculosis.

At any rate, having satisfied myself that I am dealing with one of psychogenic origin, I explain to the patient, with emphasis, that he has absolutely nothing of a serious nature in his larynx, and that there is no reason why he should not speak normally, etc.

Most people are impressionable. One is swayed by a speaker for or against a principle. It is on this fact one relies in the use of moral suasion.

We speak to the patient with firmness, confidence and conviction in our ability to absolutely restore his natural voice, and we succeed.

He is lacking in the power to make that initiatory effort to bring his cords in the proper position, or the necessary expiratory blast for voice production. We instil that necessary power into him.

Patients were formerly sent to me in batches of ten or twelve for treatment, but I now make it a rule not to take in hand more than four or five consecutively; for whereas many of them may be simple cases, on the other hand, you may find one which will tax all your patience and ingenuity. Should one have to deal with one or two cases of this latter class, I, personally, find that I have not as much power over the subsequent ones as I should desire.

I select a case which I expect will rapidly respond to treatment, and, after restoring the voice, let him speak to the other patients waiting their turn.

The moral effect of one cure is a great help in our efforts in the subsequent cases.

Physical.

Knowing as we do the anatomical and physical conditions for perfect phonation, we are in a good position to put the patient on the right path. Physically we are dealing with two classes of cases:

(1) Those in which there is lack of sufficient obstructive pressure to the expiratory blast.

(2) Those in which the obstruction is excessive and the expiratory blast not powerful enough.

Without exception they all breathe shallowly. They never seem to fill their lungs with air preparatory to phonation.

Some of them attempt to phonate during air intake: this is especially so in the men who stammer.

These faults we have to correct.

I make the patient expand the chest two or three times by deep breathing: then when he is able to breathe deeply, tell him to hold the breath at the full expansion of the lungs and make a quick, expiratory effort or cough. As a rule, we can elicit quite a good note by this simple method, and this fact is pointed out to the patient.

The simplest class of case belongs to (1) and (2).

(1) Where the cords are in the elliptical position—that is, lack of tension: or

(2) In the cadaveric—that is, no semblance of adduction on attempted phonation. Often in these the act of laryngeal examination—the tongue being forcibly pulled out and the patient told to say “ah” is sufficient.

Here we have both a suggestive and a physical force acting. We have prepared the patient’s mind previously for a cure; we now suggest a vocal sound. The physical force is an increased tension on the cords through reflex action from touching the pharynx; and also the pull on the tongue secondarily pulling on the epiglottis tends to help the tension of the cords.

But all are not so simple as this, and we have to resort to various methods.

In the most obstinate cases (see Plates III and IV), where there is an increased tension, strain, or tonic spasm, we have to overcome this by either increasing the upward pressure of air, or in some way making the patient relax the cords.

To assist him in the expiratory effort I place my hands on the lower ribs, the thumbs pressing just below the xyphoid cartilage, and use compression, directing him to use his abdominal muscles forcibly to phonate the sound “ah.”

If this fails, make him forcibly groan, at the same time withdrawing the tongue. The placing of a laryngeal probe directly into the larynx will have the effect of relaxing the pressure if the patient be told to cough at the same time. By these means we eventually succeed in eliciting the first musical sound we are trying for.

The results are as follows :

Of thirteen dumb cases all regained normal speech except two. One who had been dumb for two years now speaks in loud whisper; thus I have not succeeded in getting normal speech out of him. The other speaks, but in a very weak and hesitating voice; though improved, he is still a physical and mental wreck.

Of the 239 aphonic cases all except eleven recovered, the majority at one sitting; in the remainder treatment had to be prolonged for one or two days.

Occasionally I find that a case, having recovered his voice under treatment at the out-patient department, becomes again aphonic after returning to his unit the following day or a few days later. To guard against this I make the patient carry out vocal exercises before me, and direct him to continue them after leaving, until he gets complete confidence in his voice. He must draw his tongue out forcibly himself and practise the sound “ah”; also must go through a course of deep breathing and humming a tone. Having once regained his voice he is thus able to maintain it by practising the natural vibration of the vocal cords.

Considering most of these cases had only spoken in whisper for many months, the cords require, or rather their muscles, a proper exercise so as to increase their tonicity and maintain them in a natural position for vibration.

By humming a tone we get a musical sound with least effort. There is no spasm of the mouth, pharyngeal or laryngeal muscles; the cords are quietly approximated, and a continuous and uniform pressure of expiratory air keeps them in vibration.

Having got the patient to fix the sound in the mouth and nasal cavities by this humming practice, I next direct him to let go the

pressure at the lips and sound the vowels "ah" or "oh," thus making it "ma" or "mo." Having succeeded in this, he next phonates "ah" without the preparatory humming. I next direct him to count, phonating each note slowly, holding the note so as to keep the cords in natural vibration—the exercise which they require. Having counted up to twenty, he has got more or less confidence in his power, and I then make him read aloud.

In the stammering and stuttering cases the fault is much the same as in the aphonic—namely, breathing and lack of self-confidence. They are all very self-conscious, and for this reason treatment is best carried out, at first, alone with the patient. As I progress I make him speak correctly in front of the patients in the wards.

I have no experience in pre-war cases, but those I am now dealing with I find invariably attempt speaking with air intake.

The stammerer hesitates at a word because he cannot get over the consonant while he fills his lungs with air.

The stutterer, on the other hand, hesitates at a vowel and repeats the consonant until he makes up his mind to attack the vowel: or in a word commencing with a vowel, such as the word "eight," he substitutes some consonant sound, labial, lingual or palatal, to give him time to get out the vowel sound "ay."

Knowing these facts, we can be of great help to the patient, as in the aphonic cases, in our moral and physical treatment. The moral I pass by, having discussed that; the physical is that we first make the patient breathe correctly and deeply.

The stammerer must be shown how to sound his consonants correctly by going through the alphabet letter by letter, telling him where to hold and when to let go the pressure necessary for the various consonants. It will be noted that he either goes on taking in air whilst he is apparently making up his mind on the consonants, or holds his breath, often till he is quite cyanosed in the face.

On the other hand, the stutterer must practise the vowels. He adducts his cords, but fails to produce a normal word, because he cannot make up his mind to let his cords relax or make the necessary expiratory blast. Here we make him practise open vowel sounds staccato. When he has mastered this, place on a consonant, and by degrees get him to say a word normally, viz., "go" becomes "oh, oh, oh—g, g, g—ger—o—go," or "say" becomes "ay, ay, ay—s, s, s—s—ay—say."

Of course, we know this treatment requires a willing patient and a great amount of patience and time on the part of both patient and teacher: in fact, more time than one can give at the present. It is for this reason I will only undertake war cases, and not those who have had the disability for years.

As I have said, most of my stammering and stuttering cases have been those who have recovered their speech after mutism. These generally require about a week before normal speech is reached.

Finally, there is the laryngeal stutter—a repetition of the vowel or a clonic spasm of the vocal cords. A number of my dumb cases had this form of stutter after recovering the voice. They reiterated each vowel in a word. The sound being intermittent, with the laryngoscope one could watch the cords rapidly adducting and relaxing.

The treatment I found best for this was humming a tone, so as to improve the tonicity of the adductor and tensor muscles of the cords.

In a few words, to sum up the treatment, I rely on—

Moral suasion.

Suggestion.

Deep breathing.

Forced expiration in the effort to get the first note out of the patient.

Then systematic vocal exercises to give the cords tone, and the patient confidence in his natural voice.

Finally, we have the malingerer to deal with, and probably it is this class which gives us the most trouble.

I should like an expression of opinion and the experience of the members as to how we are best able to recognise this class. Are there any definite signs to know the malingerer by? It is very easy to feign aphonia. There are some of these apparently functional cases who can, by means of the electric current, or even passing a laryngeal probe with wool soaked in silver nitrate solution or other local irritant, be made to emit a loud note on forced expiration, possibly against their will, but who, on being told to speak in a normal voice, will again at once whisper, and nothing we can do or say will succeed in getting normal speech out of them.

My own impression is that a number of these cases in which the laryngoscope shows the cords tightly adducted, and the laryngeal constrictor muscles forcibly in action, are not genuinely functional.

The laryngeal appearance and the general bearing of the patient have led me to suspect malingering. Having extracted speech I have told the patient he *was* malingering, and he has not denied it.

It is becoming quite a problem how to deal with these cases. I am speaking from a medical point of view. A few days ago I was discussing this point with the S.M.O. of a large Command Dépôt, from which come many of the aphonia cases I have to deal with, and he asked me what he ought to do with these men who still persist in whispering speech in spite of treatment; and also those I have returned "cured," yet, on reaching the dépôt, again relapse. Again, I consider that some of the relapsing cases are malingerers. Others there are, I know, in whom we might expect a relapse, for possibly the treatment, moral or otherwise, has not made sufficient impression on them to be lasting.

If they have a perfectly normal larynx and are made to speak normally before leaving you, yet, on returning to their dépôt, etc., go sick and say they can only speak in a whisper, I consider, as far as this disability is concerned, they should be marked A class, and made to do same duty as other men—even active service.

As I remarked earlier on, many of my cases had been aphonic or dumb for nine months, and some as long as two years. If it once becomes a general rule that these cases are allowed to remain in hospital or command dépôts for this length of time, their number will steadily increase.

This fact has been very forcibly impressed on me after visiting every large war hospital in the Southern Command in connection with this class of case.

I am sure it is not generally recognised that there are numerous patients, in all, with loss of voice in the various war hospitals throughout the country—and I say it advisedly—who are being treated incorrectly. Patients are marked as "Laryngitis," and pass from one hospital to another, month after month.

I need only instance one case, that of Driver R——, who had been in

no less than ten different hospitals over a period of twenty-six months; had had various treatments, including faradism and massage, yet who, under an appropriate moral treatment, regained his voice completely in four days.

These cases are aphonic through purely psychic conditions, and, as I have shown, can, by an intense, persistent, and energetic psychotherapy, be cured and returned at once to their unit, not only a satisfaction to the patient himself, but at the same time a very material gain to the country.

A NOTE ON THE AFTER-TREATMENT OF AURAL AND NASAL OPERATIONS.

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Sheffield.

IN his presidential address to the Section of Otology,¹ Mr. Banks-Davis raised the question as to the best after-treatment for cases of "radical" mastoid operation. Like him, I have tried all the recognised methods. For the last twelve months I have been using a modification of the Carrel-Dakin "progressive sterilisation" method, which has given me better results than any of the methods previously tried.

I complete the operation by making a downward turning plastic meatal flap, which has the advantage of leaving the antral cavity freely exposed. I insert a large, but not tightly fitting, open rubber tube through the enlarged meatus. It is important that the tube should not press tightly on the edges of the meatal incision, otherwise perichondritis of the pinna is apt to be set up. The retro-auricular wound is completely sutured. A single fold of aseptic gauze is carried round the pinna, but no dressing at all covers the meatal tube. The whole ear is covered by a perforated zinc shield, fixed in position by tapes tied round the head. The patient lies on the opposite side, and the nurse is instructed to run the Carrel-Dakin solution into the tube with a dropper every two hours. The shield is simply raised each time the wound is irrigated, and subsequently replaced. I have also used acriflavine solution for irrigation. This also gives good results, but, I think, not quite so good as the Carrel-Dakin solution.

The figure shows the shape of the shield and the method by which it is fixed in position. It will be noticed that the edges of the perforated zinc are covered by a split rubber drainage-tube. The shield is sterilised by boiling.

The irrigation is kept up for a fortnight, at the end of which time the wound is sterile. The drain-tube is then removed, and the meatal flap is found to be fixed in position, and the meatus well open. The post-auricular wound is usually healed. The further treatment consists in light packing of the meatus with a strip of bismuth gauze. At this stage the packing can be done quite painlessly. The shield is usually worn for six weeks to prevent infection of the wound from outside. The ear is usually about dry at the end of six weeks.

I use a similar shield after nasal operations (as shown in the figure). It has the great advantage of preventing infection of the nose from the outside by the patient's fingers or handkerchief. Before I began to use

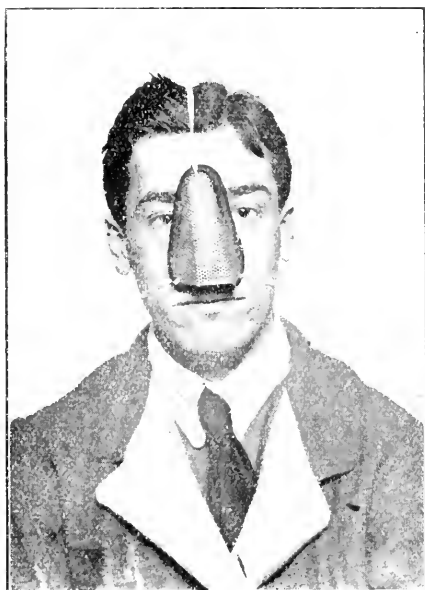
¹ JOURN. OF LARYNGOL., RHINOL., AND OTOL., vol. xxxiii, p. 321.

this shield I never succeeded entirely in eliminating this source of infection, in spite of the provision of sterile swabs for the patient's use.

It appears to me there are two principal sources of infection to be guarded against in nasal operations: (1) infection from the outside, usually conveyed by the patient's fingers; (2) entry of vomited matter into the nose during or subsequent to the operation. The use of the cage eliminates the first danger. The second factor has to be reckoned with only in cases operated upon under general anaesthesia. I consider it a very real danger, and I have seen several cases of infection of the maxillary antrum following soiling of the nose by vomit. The tendency of the patient to vomit on partial recovery from anaesthesia seems to be increased by preliminary preparation of the nose by cocaine and adrenalin, and by operating in the sitting position.



Cage for Carrel-Dakin Treatment of Mastoid Wound.



Cage for Use after Nasal Operations.

To prevent this accident, for several years I have made it a rule to employ intra-tracheal intubation, with sponge packing of the pharynx, in all nasal operations done under general anaesthesia—even submucous resections. The control of the anaesthesia is much better, and all danger of entry of blood, secretions, pus, or foreign bodies into the lungs is obviated, and also the danger of the nose becoming soiled by vomit is much reduced. At the conclusion of the operation I pack each nasal fossa with a rubber sponge tampon. The patient is rolled right forward onto his face before the pharyngeal sponges and tracheal tube are removed. The nasal tampons are removed on the morning following the operation. The shield is worn for four to seven days.

Though outside the immediate scope of the title of this communication, I should like to refer to the good results obtained by the use of

acri-flavin in cases of suppuration of the maxillary antrum. I have used it in six cases in the following manner: After puncturing the antrum I wash out with a mild alkaline solution or a solution of boric acid, and afterwards dry the cavity by blowing air through. I then lateralise the patient's head, and run in through the cannula one or two drachms of warm 1 in 1000 solution of acri-flavine. The head is kept on the side, slightly tilted backwards, for five minutes, and then bent forwards to allow the excess of solution to run out of the nose. At the next washing, two or three days later, one obtains one large "blob" of transparent yellow-stained mucus, mixed with flocculi of opaque orange-stained pus. The lavage is repeated at intervals until the yellow blob is obtained free from the orange-stained pus element. The acri-flavine is then discontinued, and at the next washing the antrum is usually found to be clear. I have not employed acri-flavine up to the present in any old-standing cases with profuse suppuration and thickened polypoid mucous membrane lining, but one of the cases in which the method has succeeded was of six months, and another of three months' duration, and my previous experience of treatment by lavage would not have led me to expect a cure by that method alone without the acri-flavine.

SOCIETIES' PROCEEDINGS.

ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

June 1, 1917.

President: Mr. T. MARK HOVELL.

Treatment of Primary Carcinoma of the Nasopharynx by Colloidal Copper.—**Irwin Moore.**—Members will remember that this case, a female, aged seventy, was shown at the meeting of the Section on November 3, 1916,¹ three and a half months after removal of the growth (July 14, 1916). The left tonsil had enlarged since the operation, was congested and indurated, whilst patient complained of severe pains extending from the left side of the neck to the top of the head. No enlarged glands could be felt. Opinions were invited as to the question of recurrence in the tonsil, and advisability of emucleation.

In the meantime patient consulted her physician, who recommended injections of colloidal copper.

Patient is now exhibited, six and a half months later, to show the remarkable results of this treatment, which has apparently not only cured the pain, but also reduced the size and induration of the tonsil.

It is now ten months since removal of the growth, and there is no recurrence nor enlargement of glands in the neck.

Lupoid Tuberculosis of the Pharynx, affecting the Soft Palate and Uvula, in a Boy, aged eight, the subject of Congenital Syphilis.—**Irwin Moore.**—This case was shown at the Section meeting on March 2, 1917, as lymphadenoma, but in consequence of the discussion and the chronic character of the infiltration, together with the more recent clinical and pathological examinations, the title has been changed.

¹ JOURN. OF LARYNGOL., RHINOL., AND OTOL., vol. xxxii, p. 103.

The former diagnosis was based partly on the blood examination, the features of which were consistent with, but not diagnostic of, lymphadenoma, but mainly on the opinion of Dr. Barcroft, who kindly saw patient for me at the Margaret Street Hospital for Consumption, on February 12, and reported as follows: "I found large discrete glands in the neck on both sides, and also in the inguinal region, which, taken with the other signs, could only be caused by lymphadenoma. Although no actual relationship has been demonstrated, it is very usual to find pulmonary tuberculosis along with this condition. However, in this case the pulmonary signs have not as yet developed."

A month later, on March 10 (since this case was exhibited), patient was taken to the Mount Vernon Hospital for Consumption and there seen by Dr. Halls Dally, who reported as follows: "I regard this case as one of *slightly* active tuberculosis. There are palpable glands in both posterior cervical triangles and groins. There is now a slight cough, with night-sweats and slight rise of temperature, and the child is losing flesh in spite of the appetite being good.

"Clinical examination reveals scattered, fine, moist crepitations over the whole of both lungs. Liver and spleen not enlarged.

"Radioscopic examination is negative. There is no enlargement of hilar glands, no peribronchial striation, and no enlargement of tracheo-bronchial glands. No tuberculous foci apparent in lung-tissue. Temperature, 3 p.m.: 98° F.

"There is a slight leucocytosis; the lymphocytes are within normal limits, but a little on the high side, and the Arnetz is low."

Since March 12 the infiltration of the soft palate has gradually extended downwards on to the faucial pillars and tonsils. Examination of the larynx on March 24 by Killian's suspension apparatus showed also infiltration of the epiglottis and arytenoids.

There are no signs of miliary tubercle nor of ulceration either in the pharynx or larynx.

Histological Report of Adenoid Tissue removed from the Naso-pharynx.

—"There is a certain amount of fibrosis with chronic inflammatory reaction, which is characterised by the formation here and there of cellular systems, which occasionally have a central multinucleated giant cell. The lesion is undoubtedly tuberculous."

This case is of interest in that—

(1) *Tuberculosis of the pharynx* is a relatively rare disease. It has been shown by statistics that it is only affected in from 1 to 2 per cent. of consumptives. It is uncommon to find tuberculosis of the uvula and soft palate. In 100 cases of local tuberculosis of the pharynx, the uvula and soft palate were found to be affected in eight

(2) *Statistics show that tuberculosis of the naso-pharyngeal adenoid tissue* has been found in 7.5 per cent. of individuals apparently free from pulmonary tuberculosis—based upon the presence of giant cells alone, or together with the tubercle bacillus; whereas in those cases of advanced disease in the lungs, especially when complicated by laryngeal involvement, the percentage is greatly increased—viz. to 68 per cent.

(3) *The chronic lupoid character of the uvula and soft palate*, together with the latent infection of the pharyngeal tonsil and the apparently recent implication of the lungs, suggests in this case a primary affection of the pharynx.

The Wassermann reaction is strongly positive.

Tertiary Syphilis of the Pharynx clinically resembling Tuberculosis of a Lupoid Type.—**Irwin Moore.**—Patient, a widow, aged forty-four, was admitted to hospital on May 23, 1916, complaining of soreness of the tongue and throat, with pain and difficulty in swallowing for five years. There has been difficulty in breathing for two years, though patient has been able to sleep comfortably lying down; also difficulty in speaking for three months. She can only swallow liquid foods, and has taken nothing solid for six months.

Patient was married at the age of twenty-two, has had one miscarriage at the age of twenty-four, whilst two children are now alive, aged nineteen and twenty-one. The swelling in the throat dates back to a year or two before marriage. She has had no treatment until five years ago, when the trouble became more marked.

Present condition: There is well-marked stridor on slight exertion. On examination of the throat, extensive nodular infiltration of the fauces and tonsils is seen extending on to the soft palate, uvula, and base of tongue. The posterior pillars are scarred, and have become adherent to the posterior pharyngeal wall. The oropharynx is markedly stenosed, the epiglottis is absent, and the larynx cannot be seen.

A low tracheotomy was performed under local anaesthesia the day after admission to hospital.

Lupoid Tuberculosis of the Nose and Larynx.—**Irwin Moore.**—I first saw patient, a girl, aged seventeen, on February 16, 1915, when she complained of hoarseness of the voice for two months. The nasal septum and right inferior turbinal showed marked lupoid infiltration, whilst the left nasal cavity appeared to have been less affected and recently healed. Both nasal orifices were somewhat contracted. The glottis was considerably narrowed, and the left vocal cord was partially fixed, causing inspiratory stridor on exertion. The right arytenoid, interarytenoid region and upper margin of the epiglottis were infiltrated, whilst the left arytenoid was ulcerated on its inner surface—as also the edges of both vocal cords. The lungs were normal. Patient's weight was 7 st. She was advised sanatorium treatment, and went to Torquay in October, 1915, for six months, where she was told that there was no disease of the larynx, and that she would get back her voice suddenly.

I did not see the patient again until May 29, 1917. The hoarseness is no better, though the general health has improved. There has been no marked change in the laryngeal or nasal condition during the past two years. There is a nodular infiltration of the epiglottis. The glottis is still very narrowed, and the left vocal cord ulcerated, whilst both the aryepiglottic folds and interarytenoid region show distinct infiltration. The left choana is occluded by adhesions, there being only a very small aperture present, whilst a small patch of infiltration is seen on the roof and lateral wall of the nasopharynx. Patient's weight is now 7 st. 4 lb.

DISCUSSION ON DR. IRWIN MOORE'S FOUR CASES.

Dr. W. HILL: If other members have had experience of the results of using colloidal copper locally, it is important we should have their views on it. I have not heard anything encouraging enough about it to lead me to use it, but I gather that the first case enormously improved under the treatment.

Dr. JOHNSON HORNE: Will Dr. Irwin Moore give us details of the

treatment—how it is carried out, how frequently, and over how long a period?

Mr. HOWARTH: I should like to know why these cases are labelled “lupoid tuberculosis”? Why have we given up the name “lupus” for these cases? One I looked at seems to be typical lupus, and it is a pity to be constantly changing the names of diseases.

Dr. JOHNSON HORNE: May I ask Dr. Irwin Moore to give us his views as to what lupus is—whether it is tuberculous or not?

Dr. BROWN KELLY: The second case is not lupus but a variety of hyperplasia. I have seen two or three somewhat similar cases and usually have found congenital syphilis present: they do not readily yield to specific treatment. The condition differs slightly from “sclerotic hyperplasia.”

Dr. JOHNSON HORNE: Has the Wassermann test been done in the second case?

Dr. W. HILL: I suppose there is a tendency to call anything lupus which looks like chronic tuberculosis and in which tubercle bacilli are not found, or they may be called “lupoid tuberculosis.” The last is a sort of “portmanteau” word, convenient to distinguish a condition from ordinary tuberculosis. I do not know whether there is a lupus which is non-tubercular. But there is a suspicion in these cases in which the lung is involved. Possibly an error in diagnosis has been made, but the original diagnosis was rather nearer the truth.

Dr. H. J. BANKS-DAVIS: I am very interested in these cases, because one constantly meets with this type. If one sees a tubercular-looking ulceration or infiltration of the palate and there is no pain, I put the case down as lupus: if there is pain, I regard it as tubercular. I do not think I have ever seen a case of tubercle of the palate or pharynx which was not very painful; so great is it that the patient will not eat, and slowly loses condition. Lupus is not painful, though the involvement may be extensive. Some years ago I saw, with Dr. Johnson Horne, a well-known singer at a London music-hall, who developed tuberculosis of the palate; he had such pain that he could not eat, and was slowly going downhill. He had had syphilis, and went away to Eastbourne. It was a question whether he ought to have injections of mercury, and iodide of potassium internally. If there is infiltration of the larynx, unless it be syphilis or malignant disease, and the patient is given iodide, the infiltration is tubercular, breaks down, and the patient becomes worse. This man was given iodide, and when he came back the whole of the palate had sloughed off. Iodides, in my experience, never reduce infiltrations in the upper air-passages if they are due to tubercle, but are liable to cause rapid destruction of the tissues.

Mr. DAWSON: With regard to the second case, I suggest that a small piece ought to be removed and submitted to microscopical examination. Even though tubercle bacilli may not be found, the structure shown by the section may reveal its nature. It reminds me of chronic enlargements of the lower lip.

Sir STCLAIR THOMSON: The boy's throat did not appear to me characteristic of lupus, and, of course, tuberculosis in the pharynx rarely occurs except in advanced cases of pulmonary disease. The condition suggests a form of hyperplasia, possibly associated with congenital syphilis. On the epidiascope I now show a very good coloured drawing of the rare form of chronic tuberculosis attacking a healthy adult, who had nothing the matter with his chest, but showed tubercular ulceration on

his arm. The picture was done some years ago; the patient was treated with tuberculin and the galvano-cautery, and was seen recently in a condition of perfect health.

MR. MOLLISON: In reference to what Dr. Banks-Davis said, in regard to tuberculosis of the pharynx, I think the cases of the kind he mentioned are invariably secondary to phthisis. Lupus is primary.

DR. JOHNSON HORNE: Are Dr. Irwin Moore's cases to be permanently labelled "lupoid tuberculosis"? I speak for the credit of our *Proceedings*. Case 3 certainly does not belong to the lupoid class, and I do not think the others are tuberculous, or the patients would not have lived as long as they have.

DR. IRWIN MOORE (in reply): Dr. Sydney Green, who carried out the injections of colloidal copper in the first case, gave, between February 20 and March 23, seven intramuscular injections of cuprase (5 c.c. doses)—a preparation obtained from the Anglo-French Drug Company. The injections were painful, so they were preceded by a 5 c.c. injection of quinine and urea. The patient is a panel-doctor's dispenser, and the injections did not interfere with her work. Her health has improved remarkably. The pain in the neck has disappeared, and the enlarged fibrous tonsil, which it was thought might be a recurrence of the growth, has become softened and reduced in size. With regard to the cases of tuberculosis in the pharynx, I have not, as yet, ascertained the Wassermann reaction in the second case, because I thought the diagnosis was sufficiently clear from the investigations which had already been carried out. In a publication by Lockhart, of St. Louis, on "Tuberculosis of the Nose and Throat," 1909, plate xxvi, there is a water-colour drawing of an almost identical case to mine. I received a report this morning that the Wassermann reaction in Case 3 is positive. It is my intention to remove a piece of the infiltration for microscopical examination. Prof. Shattock has advised the retention of the term, "lupoid tuberculosis."

Specimen of Epithelioma of Left Vocal Cord Two Years after Operation.—James Donelan.—Patient, a male, aged fifty-four. Some of the chief points in the history are that the patient was an excessive user of cigarettes and alcohol. He also contracted syphilis in 1888. I first saw him in 1908. He had then a pronounced deflection of the nasal septum to the left, almost completely blocking that side and causing sinus retention. An irritating discharge passed down the left side of his pharynx and caused some laryngeal irritation and cough. He was averse from any operation at that time. Several negative Wassermann reports were received. Nevertheless energetic antisyphilitic treatment was given. The nasal septum was subsequently resected, and the local and general condition being much improved he returned to India.

He was seen again on August 22, 1914. Hoarseness. Small sessile growth at junction of anterior and middle thirds of left vocal cord. Mobility unimpaired. Mercury and iodides were again ordered, and as no effect was apparently produced exhibitor removed the growth by the indirect method on the eighth or tenth day after seeing him, and Dr. Wyatt Wingrave reported verbally that it consisted of merely inflammatory tissue with no malignant elements. The gap left by the operation filled up rather too rapidly, and the appearances were such ten days later that a consultation was suggested as to whether laryngo-fissure should be performed. The patient was seen with Dr. Dan McKenzie, and he suggested that a more extensive removal of tissue should be made by

direct method. It was arranged that Dr. McKenzie should remove specimens from the most suspicious parts of the swelling. This was done on September 14, 1914. Dr. Wingrave again reported that no malignant elements were present. Though advised to keep under observation the patient disappeared for six months, three of which were spent at Harrogate, where he had a course of treatment by means of sprays, etc. As the condition of his larynx did not improve he returned to London at the end of March, 1915. All the appearances were then those of malignant disease, and the removal of the cord was advised. Patient desired a further consultation, and saw Sir StClair Thomson, who recommended operation as soon as possible.

On April 13, 1915, I removed the whole of the left cord, including the vocal process. As the condition of the commissure appeared suspicious, it was thought best, even with the greater loss of voice, to remove the anterior third of the right cord as well. The after-course was quite uneventful, and patient went for a drive on the eighth day. He continued remarkably well until April, 1916, when he had decided symptoms of tertiary syphilis with increasing stenosis of the larynx. The curious thing about this is that the granuloma and cicatricial bands first developed on the right side, affecting chiefly the arytenoid and remainder of the cord, and the patient could breathe only through the space left by the removal of the left vocal cord. In consultation with Sir StClair Thomson it was decided that tracheotomy should be done, and patient has worn a tube since June 4, 1916. Since then the appearance of the larynx has at times given rise to considerable anxiety as to recurrence of malignant disease, but improvement has always followed the use of arseno-benzol in suppositories and energetic mercurial inunctions and injections. The patient's general condition has greatly improved, and the view is held that up to the present there are no positive signs of recurrence.

Dr. Fletcher, acting on behalf of Dr. Eastes, reported that the section of the left cord showed a distinct epithelioma while the posterior part was free from the disease. Through an accident the portion removed of the right cord was not preserved at the time of the operation.

SIR STCLAIR THOMSON: This case teaches several lessons. One is, that the direct method of removing growths from the vocal cord goes no deeper and is no more effective for obtaining a specimen than is the indirect method. A specimen was removed by the indirect method by Dr. Donelan, but was not deep enough to disclose the malignant growth, as often happens. Dr. Dan McKenzie attacked this growth by the direct method, but he also failed to get down to the malignant growth. On these two negative bases this patient goes untreated for six months before removal is carried out. Not having seen the patient earlier, I cannot say whether a diagnosis could have been made earlier. In many of these cases it is a physical impossibility to get a satisfactory specimen from a cord: so we are reduced, in such cases, to purely clinical grounds—*i. e.* to the appearances which we all know—and to watching the case, looking for the slow flagging coming on in the cord, the cauliflower appearances, the dimpling, and the cupping which often takes place in these growths in the middle. An important side issue from epithelioma in this case is that I understand this syphilitic subject gave six negative Wassermann reactions; yet, from the view I got when Dr. Donelan allowed me to see the case, I was convinced that it was the syphilis which had returned. He was treated with antisiphilitic remedies, and he is alive and well, and there is no recurrence of his malignant disease. Here, again, too many

people are apt to trust to the "penny-in-the-slot" diagnosis, and conclude that if a patient does not give a positive Wassermann he has not got syphilis.

Dr. DONELAN (in reply): I am much indebted to Sir StClair Thomson for bringing out the points of interest in this case. I regret very much the absence of Dr. Dan McKenzie, as I know he had some observations of the highest interest to make. I have only to call attention to the notes, which show that from the first I advised this patient to have his cord removed because the appearances were those we recognise as those of epithelioma. It is admitted that as much as 10 per cent. of negative Wassermann reactions are unreliable, and this case appears to be one of the 10 per cent.

Nasal Fibroma (of the Right Fossa) with Specimen and Microscopic Section.—**L. H. Pegler.**—The case is that of an elderly man, with specimen and section (described at the last meeting),¹ enabling members to note the subsequent behaviour of the root on the middle turbinate, which has not been disturbed. The fuller histological report promised is as follows:

Surface much fissured. The fissures and intrusions are invested with the ordinary epithelium: some of them run deeply into the substance, but, though continuous with the surface, appear as circular spaces, the long palisade epithelium contrasting with that lining the gland ducts.

Stroma of fibrous tissue, parts of which are of considerable density: it is remarkably non-vascular.

Glands are conspicuous and generally distributed. There are groups of acini and many ducts.

This growth, which bears some pathological relationship to a polypoid mucous hypertrophy, is best described as a fibroma, the pedunculation and volume of the mass justifying the diagnosis. (This is also Mr. Shattock's view, who has carefully studied the specimen, and has requested it for the College of Surgeons' Museum.)

Mr. FRANK ROSE: I examined this microscopical section with considerable interest, because it is something which one seldom sees. My difficulty consists in giving a suitable name to it. It is called a fibroma. There is fibrous tissue in it, but that is not its most conspicuous feature. The epithelium, both that covering the outside of the specimen and that forming the gland tissue and the ducts, is quite as conspicuous, and I hesitate to apply the term "fibroma" to a specimen in which there is so much glandular tissue. It reminds me more of the structure of a nasal polypus, one in which the basis is tough and firm. I shall be glad to hear Dr. Pegler suggest a title which does justice to those features.

Mr. CLAYTON FOX: Why not call it "non-cedematous fibroma" in contra-distinction to cedematous fibroma—the ordinary nasal polypus?

Dr. W. HILL: I suggest "fibroglandular hyperplasia" as a name for it.

Dr. PEGLER (in reply): Valuable though the microscope may be in determining the nature of a tumour formation, it has its limits as an aid to diagnosis. One is at a great disadvantage in forming an opinion if unable to study the macroscopic aspect of a growth *in situ*, its behaviour during operation, and its appearance in the fresh state after removal. There are signs of recrudescence in the middle turbinal attachment, which has not been disturbed since evulsion, and so far the appearance differs greatly from that which we should have seen in a

¹ See JOURN. OF LARYNGOL., RHINOL., AND OTOL., vol. xxxiii, p. 304.

common polypus case. I shall keep the patient in view. Several members have commented upon the title "fibroma" for the specimen. The only alternative that Mr. Shattock could suggest when we studied the specimen together was "fibro-adenoma," but we concluded that the glandular element was not conspicuous enough to justify this name. On the other hand, I quite admit that the growth has its affinities, and any leaning here is certainly towards the turbinal moriform hypertrophy type, but the affinity is not sufficiently close to indicate any clear reason for altering the selected title, which best covers its main features. Mr. Shattock's verbatim report having been asked for, and promised by myself, is here appended:

"(1) *Stroma* of fibrous tissue nowhere of great density. It has a conspicuous amount of gland-tissue distributed in it, but this does not assume sufficient proportions to allow of such tissue being viewed as neoplastic, and enable us to class the growth as a *fibro-adenoma*. The surface of the growth is much fissured, the processes being invested with the ordinary (palisade) epithelium. Some of the fissures run deeply into its substance, and though doubtless continuous with the surface, the connection in many instances is missed in the section. The long columnar epithelium lining such spaces is ciliated, and so differs from that lining the gland ducts. I should think the growth best described as a *fibroma*. I have looked at sections of inferior turbinals with moriform hypertrophy; there are quite as many glands in that tissue just below the epithelium. I take it that this fibroma is somewhat akin to a moriform hypertrophy in which similar deep fissures occur; but in the latter the signs of inflammation are obvious, whereas in the specimen under consideration the pedunculation and volume of the mass justify it being classed as a neoplasm."¹

(To be continued.)

Abstracts.

PHARYNX.

Bone Metaplasia in the Tonsil.—Henry Albert and Minnie Douglas.

"Annals of Otolaryngology," xxvi, p. 909.

The first report of a case of bone or cartilage in the tonsil was made by Orth in 1893. They have been found in the following forms: (a) Elongation of the hyoid bone or styloid process extending into the tonsil; (b) bony plates or nodules and cartilaginous nodules. Interest in the phenomena centres chiefly round the problem of the origin of the bony and cartilaginous nodules not connected with the skeleton. Investigators have disputed their occurrence from two points of view: (a) That they are the result of metaplasia following inflammation in the tonsil; (b) that they are the result of cartilage-cell remnants from the second branchial arch just below which the tonsil has its origin. The cell remnant theory best explains a large number of cases. The authors publish one case, the facts of which favour metaplasia.

MacLeod Yearsley.

¹ In a subsequent note sent to the exhibitor since the date of the meeting Mr. Shattock points out that the real gland-tissue not being in excess of that found in the normal nasal mucosa should decide against a diagnosis of fibro-adenoma or of fibro-adenomatous hypertrophy.

Diphtheria presenting Unusual Multiple Paralyses, with Recovery.—
J. L. Brownlie. "Lancet," February 16, 1918, p. 257.

Girl, aged nine and a half. The case was complicated by six distinct and different diphtheritic palsies. These were, in order of recurrence: Palatal, right external rectus, right levator palpebræ superioris, both ciliaries, right lingual, and right facial. *Macleod Yearsley.*

Some Clinical Observations on the Lingual Tonsil Concerning Gôitre.
Glossodynia, and Focal Infection. Greenfield Sluder (St. Louis).
 "Amer. Journ. Med. Sci.," August, 1918.

The writer believes that "the lingual tonsil plays a far greater and more variegated part in the practice of laryngology than is generally thought. It is probably the most frequent clinical issue in the adult throat." Acute follicular lingual tonsillitis not infrequently accompanies a similar condition of the faucial tonsils, and may replace it when the faucial tonsils have been removed. Subacute or chronic inflammation of the lingual tonsil gives rise to various sensations, such as the feeling of mucus in the throat which cannot be cleared away, sensation of a "lump," painful stiffness, globus hystericus, etc. Cough is a frequent manifestation, and may possibly arise from contact of the enlarged tonsil with the epiglottis. "Enlargement of the mass may push the epiglottis down, causing strangling in sleep should the tongue fall back even to the slightest degree." The singing voice is often interfered with: the tone is uncertain, and the voice gives way or cracks after use for only a few minutes. In the author's opinion the faucial tonsils are much less often the cause of, or even party to, these vocal disturbances than the lingual. As a possible site of focal infection with systemic manifestations, the lingual tonsil is quite as much to be considered as the faucial. The writer has "often seen it re-establish the systemic condition, rheumatism, for which the faucial tonsils had been enucleated," and he has "seen the condition relieved by treatment of the lingual tonsil without enucleation of the faucial tonsils." He has frequently observed temporary enlargement of the thyroid gland in association with an attack of acute follicular lingual tonsillitis, and in chronic enlargement of the thyroid decrease in size has followed treatment of the lingual tonsil even though it appeared normal. Lingual tonsillitis has also seemed to play a part in "painful tongue," especially when associated with inflammation of the papilla at the junction of the palatoglossal fold with the tongue.

The treatment of acute lingual tonsillitis is similar to that of acute faucial tonsillitis. For chronic conditions with or without enlargement, the most satisfactory application is a saturated solution of silver nitrate in 50 per cent. glycerine. A saturated solution of salicylic acid in 95 per cent. alcohol is also useful. Enlargement is treated by means of the galvano-cautery or Myles' lingual tonsil guillotine.

Thomas Guthrie.

NOSE.

Some Aspects of Maxillary Antrum Disease.—W. Barrie Brownlie.
 "Brit. Med. Journ.," October 12, 1918, p. 493.

Four cases are described illustrative of the relationship of maxillary sinusitis to neighbouring inflammatory conditions. Daercycystitis associated with nasal sinusitis is by no means rare, and is in many instances, as in the case cited, an ascending infection. Provided the

nasal duct is fairly patent, dacryocystitis may in many cases be cured by treatment of a co-existing sinus suppuration.

The relationship of nasal sinus disease to otitis media is well known, and the author quotes a case of chronic otitis media of five years' duration which had resisted all treatment, including removal of adenoids on two occasions, but which dried up completely in five weeks after drainage of the maxillary antra, both antra containing pus.

Another patient had had a radical mastoid operation performed two years previously, but discharge persisted. Proof-puncture revealed pus in both antra, and after operation on the sinuses the ear became dry.

Douglas Guthrie.

Hay-Fever Resorts in the United States and Canada.—W. Scheppegegrell.

"Journ. Amer. Med. Assoc.," August 17, 1918.

It has been demonstrated that, as hay-fever is due to the inhalation of pollen from wind-pollinated plants, the disease may be abolished in certain areas by eliminating such plants. Certain hay-fever resorts have been established on the American continent, where great pains are taken to keep down or destroy all wind-pollinated plants. The commonest weed in America causing hay-fever is the common ragweed (*Ambrosia elatior*), while another common one is the sage-brush (*Artemisia*). Some people are sensitive to the pollen of one variety of weed while others are free. The ragweed does not grow in Europe, so sufferers from the pollen of this plant may find relief there. Contrary to the popular belief, altitude is no protection against hay-fever unless this exceeds 6000 feet. Up to 4000 feet the ragweed flourishes as abundantly as on the plains, but at 6000 feet it grows only with great difficulty. An island that is kept free from weeds and has no land nearer than five miles is generally free from hay-fever. As a rule one or two miles of water is sufficient protection. Seaside resorts are good only so long as the wind blows off the sea, as a land wind, as a rule, brings pollen with it.

The writer appends a list of places where, on account of altitude, presence of forests, etc., where weeds are not found, hay-fever subjects find relief.

J. K. Milne Dickie.

Systemic Manifestations of Chronic Nasal Sinus Infection in Childhood.—Albert H. Byfield (Iowa). "Journ. Amer. Med. Assoc.," August 17, 1918.

In clinical investigations in connection with the source of infection in chronic deforming arthritis in children, it was observed that removal of tonsils and adenoids and treatment of the teeth as possible foci did not control the progress of the disease. In the search for a septic focus it was found that there was often purulent nasal discharge. In the first two cases in which the antra were examined a streptococcal infection was found. This was vigorously treated, resulting in gradual improvement and ultimate complete recovery.

Routine observations by means of X ray, nasal examination and puncture of the antra were carried out in a large number of children. It was found that 14 per cent. of all children examined in the Otological Department of the State University of Iowa had a demonstrably pathological condition of these regions. At the same time numerous patients in the Pediatric Department were found to have an association of sinus suppuration with other conditions. The writer had a number of cases of infectious arthritis, which recovered in a remarkably quick and

complete manner after radical treatment of infected nasal accessory sinuses. Other disorders associated with infected sinuses are chronic cough, nephritis, pyelitis, asthma, and diphtheria carriers.

As regards treatment, the writer is in favour of trying conservative treatment in the first instance, and if that fails to resort to radical surgical measures.

J. K. Milne Dickie.

LARYNX.

A Case of Fracture of the Hyoid Bone.—Elizabeth L. Ashby. "Lancet," June 8, 1918, p. 803.

Man, aged seventy-two, fracture due to a crush under the wheels of a motor-van. Able to walk to hospital. Sudden death next day, probably due to delayed shock consequent upon severe injury of the cervical region.

Macleod Yearsley.

Lymphangeioma of Larynx.—W. Richardson. "Rev. de Laryngol., d'Otol., et de Rhinol.," June 15, 1918.

A large supraglottic tumour entirely occluded the larynx in a man, aged thirty-two, causing dyspnoea and dysphagia.

Preliminary puncture caused no bleeding, and therefore the neoplasm was removed by the endolaryngeal route under local anaesthesia. Histologically it was a true lymphangeioma. (It is a pity that this interesting case, shown at the American Congress of Laryngology, is not reported more fully.—*Abs.*)

H. Lawson White.

Amyloid Laryngeal Tumours.—A. Pognat. "Journ. de Laryngologie, etc.," May 15, 1918.

The rarity of these neoplasms is exemplified by the fact that the author's case is only the twenty-eighth hitherto reported. They occur in middle or old age, usually in males, and most often in the conjunctiva, the next most frequent site being the larynx. Neither syphilis nor abuse of the voice plays any aetiological rôle, and when they affect the larynx there is no site of election.

Their histology is not uniform. Their symptomatology, given fully in the original paper, is that of any innocent laryngeal neoplasm. Their duration may extend to forty years; metastasis is unknown. In differential diagnosis, which must be made especially from fibroma, the cardinal points are the vitreous semi-translucent appearance and the histological staining reaction with methyl violet.

The prognosis after removal (preferably, of course, endolaryngeal) is good, except in a very rare diffuse form, which may eventuate in glottic stenosis.

H. Lawson White.

Primary Acute Laryngeal Perichondritis.—G. Canuyt. "Rev. de Laryngol., d'Otol., et de Rhinol.," February 15, 1918.

Moure, Macdonald and Lennox Browne have testified to the existence of this as a clinical entity. Of the circumscribed form the salient features are persistent pain, exaggeration of vocal fremitus felt by a finger on the laryngeal box, with absence of dyspnoea.

Resolution may occur without necrosis. There is also a diffuse form.

in the course of which there will be found, in addition to the signs just mentioned, an œdematous laryngo-tracheal stenosis producing dyspnoea and pain on speaking, with phono-phobia. In this second diffuse variety the formation of discrete pus is exceptional. A phlegmonous inflammation may extend down the trachea as far as the mediastinal part of its course.

The differential diagnosis must be made from perichondritis secondary to neighbouring septic foci, from lymphadenitis, acute thyroiditis, tuberculous and syphilitic disease, new growths, and perichondritis occurring in the course of the exanthemata.

In treatment the external use of belladonna and moist dressings may be supplemented by laryngeal insufflations. If pus forms, the incisions made should be bold.

H. Lawson White.

THYROID GLAND.

The Toxic Element in Goitre.—Sydney Pern. "Medical Journal of Australia," April 6, 1918.

Pern says the thyroid hypertrophies if certain toxins are present, and such hypertrophy can reasonably be looked upon as a defensive process or an attempt to eliminate or destroy such toxins. Why one person affected with a certain toxin should develop a thyroid enlargement and another with the same infection escapes is explained by the complex functions of the thyroid body. Besides dealing with toxins, it plays a very important part in the calcium and iodine metabolism. Goitres, often of very large size, which give rise to no signs of hyperthyroidism or constitutional disturbance have their iodine metabolism at fault: such are found in the limestone districts in Switzerland. The other type, in which the calcium metabolism is at fault, is found in Victoria, principally in Gippsland, where goitre is usually associated with increased thyroid activity. Here lime is deficient in the soil. The drinking of rain-water, and the dislike to milk by the children who do much milking, lead to the deficiency of calcium in the system.

Pern selects thirty-five cases from his case-books where the treatment of pyorrhœa, sinus suppuration and the removal of septic tonsils is said to have brought symptoms of Graves's disease to an end.

A. J. Brady.

EAR.

Mastoid Disease in the Balkans.—J. Arnold Jones. "Lancet," May 18, 1918, p. 704.

The author points out that there are two diseases—trench fever, incidental to the campaign, and malaria, incidental to Macedonia—which complicate the diagnosis of suppuration in the temporal bone. The author notes two cases in which trench fever caused him to open a normal mastoid. He also describes a case in which the presence of malignant malaria co-existed with a suppurative lesion of the temporal bone, and gave rise to great difficulties in diagnosis.

Macleod Yearsley.

War Deafness.—McBride and Logan Turner. "Lancet," July 20, 1918, p. 73.

The authors have come to certain definite conclusions after a painstaking analysis. These conclusions are against the suggestion that normal results to vestibular tests are presumptive evidence of malingering. They are as follows:

(1) That concussion-deafness is generally due to some organic change.

(2) That the prognosis is usually bad.

(3) That the results of the vestibular tests can only be utilised in conjunction with information derived from other sources. Thus, if the patient shows other hysterical symptoms, vestibular tests may perhaps under certain circumstances help diagnosis; but to state that they do more than this is, in their opinion, "misleading and dangerous."

Macleod Yearsley.

Hysterical Mutism caused by Shell Explosion.—Marcel Natier (Paris).

Natier records the case of a soldier, aged thirty-six, who had always been very nervous, and suffered from headaches accompanied by giddiness and vomiting. On October 3, 1914, a shell exploded close to the right side of the patient and hurled him a distance of 6 metres. The patient was not rendered unconscious, and on the way to the field hospital was exposed to a hail of shells. Shortly afterwards he lost the power of speech and suffered from right hemiplegia. In hospital electro-therapy was applied to the right half of the body and the larynx, and at the end of a week the patient could move his right arm and thigh. Later the patient was removed to the Salpêtrière in Paris, where a minute neurological examination was carried out—too long for abstraction. The patient was very emotional, and when questioned made violent efforts to talk, but these only provoked facial contractions. Natier carried out respiratory gymnastics and obtained a complete cure, but does not give any details of the method. He considers that simulation could be excluded, because the patient made repeated efforts to talk and was sincerely delighted when recovery occurred. Laryngoscopic examination showed that on attempted phonation the glottis was hermetically closed. Natier holds that his inability to speak was due to motor inco-ordination. Violent measures to obtain a cure may only make such a case worse, while patience and gentleness appeal to the reason of the soldier and convince him of the benignity of his condition.

J. S. Fraser.

Posterior Mastoiditis.—E. J. Moure and J. Rozier. "Rev. de Laryngol., d'Otol., et de Rhinol.," March 15 and March 31, 1918.

Abscesses which have formerly been known under the generic title of Bezold's mastoiditis may occur in certain special regions of the neck. Their formation and situation depend upon—

(1) *The disposition of the posterior groups of mastoid cells.* These are postero-superior, posterior, and postero-inferior.

(2) *Situation of the perforation of the mastoid abscess.* This may occur—

(a) Posteriorly, through the canal for the mastoid emissary vein or through the temporo-occipital suture; or

(b) Postero-inferiorly, through either the mastoid apex or its internal surface into the digastric groove.

(3) *The normal musculature of the neck.*

Three important regions are naturally delimited: the trapezo-sterno-mastoid, in the upper part of the posterior triangle of the neck; the retro-maxillary, between the sterno-mastoid and the jaw; and the region of the great vessels, along the carotid sheath.

Treatment consists in operating on the mastoid, and after so doing (*never before*) tracing out the sinus from the interior of the mastoid to the neck, and, finally, opening the neck abscess.

Except for a small drain in the antrum, the mastoid wound is closed; the neck wound is freely drained.

H. Lawson Whale.

ŒSOPHAGUS.

Total Expulsion of the Œsophageal Mucous Membrane.—Mme. A. Sauvin-Thury. "Rev. Med. de la Suisse Romande," June, 1918.

A healthy woman, aged forty-eight, rose as usual at five o'clock feeling perfectly well. At seven she took breakfast, and towards the end of the meal felt a violent pain in the region of the ensiform cartilage, as if she had swallowed too big a piece of bread. At eleven o'clock, still suffering terribly, she began to vomit blood. She choked, her neck swelled, and about twelve o'clock she coughed up a long membrane, which her husband pulled out of her mouth. This membrane was in the form of a long, flattened cylinder, smooth on both its external and internal surfaces, pale, and of an even thickness throughout. It was in two parts, the one 34 and the other 4 cm. long. Prof. Huguenin examined a portion and reported that it consisted of stratified pavement epithelium and a little connective tissue, apparently the mucosa of the œsophagus, with no signs of inflammation in it. For a few days the patient had great pain and difficulty in swallowing, but gradually the pain ceased and in a month's time she could swallow almost quite well. Nothing could be found in the membrane, in the patient or in her previous history to account for this remarkable occurrence. The heart, lungs, digestive system, urine, etc., were normal; no signs of burn, ulceration, etc., were to be found either in the membrane or in the woman's throat. About a year earlier she thought she had swallowed a piece of bone which lodged at the bottom of the œsophagus and caused some bleeding, but no foreign body was found by endoscopic examination.

The reporter suggests as a possible explanation the spontaneous sub-mucous rupture of an œsophageal varix.

Arthur J. Hutchison.

MISCELLANEOUS.

Infection of the Upper Respiratory Tract with Staphylococcus Pyogenes aureus, presenting the Symptom-complex of Acidosis. L. U. Gardner (Boston). "Amer. Journ. Med. Sci.," March, 1918.

The three fatal cases recorded in this paper occurred in children of the ages of seven, one, and two years respectively. All showed an acute laryngitis with membranous deposit, broncho-pneumonia, and various toxic reactions in the lymphadenoid tissue in the walls of the blood-vessels and in the renal epithelium. The clinical picture suggested that acetonuria was present. Culturally and morphologically the causal

organism obtained in pure culture from the blood, larynx and lungs was a typical *Staphylococcus pyogenes aureus*. There are very few records in the literature of a true diphtheritic membrane in the larynx due to *Staphylococcus aureus* such as occurred in these cases. They illustrate the necessity for examination of the larynx—an organ often neglected by pathologists in the course of routine autopsies. *Thomas Guthrie.*

The Selection of Candidates for the Air Service.—**H. Graeme Anderson.**
 "Lancet," March 16, 1918, p. 395.

In the course of a general discussion on this subject, the author lays stress upon absence of pyorrhœa, sore throats, earache, deafness, otorrhœa, and nasal obstruction. Defective hearing in the pilot or air mechanic may lead to serious injury or death. A sound equilibration and muscle-sense is essential in flying, but most of the impressions which control balance in flying come through the eyes. *Macleod Yearsley.*

Radium in Tuberculosis of the Skin.—**W. H. B. Aikins.** "Canadian Pract. and Rev.," February, 1918.

The writer describes a number of cases of lupus of face and nose treated with radium. In most instances the radium was applied in sufficient doses to cause destruction of the lupoid tissue, after which a clean, healthy scar formed. Finsen light treatment is in many cases more satisfactory, but radium gives better results in some cases, and has the advantage that it can be applied to the mucous membrane of the air-passages in situations where other forms of treatment are unsatisfactory. *J. K. Milne Dickie.*

NOTES AND QUERIES.

SIR ROBERT WOODS, M.P.

We extend our heartiest congratulations to Sir Robert Woods, Professor of Otology and Laryngology in Trinity College, Dublin, who has been elected one of the Members of Parliament for Dublin University at the recent General Election. He is, we believe, the first oto-laryngologist to become a member of the Imperial House of Commons.

INFORMATION.

"Earache," wrote Harry in his physiology examination, "comes from bits of information getting inside the ear tubes."—*Pall Mall Gazette.*

BOOKS RECEIVED.

Headaches and Eye Disorders of Nasal Origin. By *Greenfield Sluder, M.D.* With 115 illustrations. London: Henry Kimpton. 1918. Pp. 272. Price 35s. net.

Equilibrium and Vertigo. By *Isaac H. Jones, M.D.* With an Analysis of Pathologic Cases by *Lewis Fisher, M.D.* With 130 illustrations. Philadelphia & London: J. B. Lippincott Company. Pp. 444. Price 21s. net.

THE
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THE COCAINE HABIT.

RECENT newspaper reports have brought the subject of the prevalence of the cocaine habit prominently, perhaps too prominently before a sensation-loving public. It is a sordid and unsavoury business from which healthy-minded people recoil in disgust. But we all read the reports, nevertheless. And, indeed, the subject touches our section of medicine very closely, since of all classes of medical practitioners none make such frequent and copious use of cocaine as do oto-laryngologists.

The first feeling most of us experience in following the evidence of the case now before the coroner must be one of annoyance to find that a drug so useful and withal so costly, especially in war time, should nevertheless be at the disposal (for a price) of whatever wretched degenerate chooses to acquire it. Obviously indulgence in the cocaine habit must render the drug scarcer and more costly, and for that reason we should welcome any measure likely to make the procuring of the drug for such nefarious purposes an impossibility.

It must not be forgotten, however, that very strict laws are even now in operative to prevent the abuse of cocaine. The difficulty of course lies, not in the passing of rules and regulations, but in having them carried out, for human nature being what it is, smugglers are always able to steal or to bribe their way through the strictest law. Public opinion, moreover, is valueless, as among the perverted set who indulge in these "doping" vices the greatest sinner receives the highest honour.

But the inquiry brings to our notice a second consideration which we oto-laryngologists ought not to ignore or to deny, and that is the risk we ourselves may run of inducing the habit in patients who consult us.

We do not refer to the loose giving to patients of prescriptions containing cocaine, as laxity of this nature is probably very unusual. And the slight spraying of the nose in order to induce shrinking of the

turbinals for purposes of inspection is harmless, if used once or twice only. Further, the topical application of cocaine to bring about an intensive action prior to operating is also free from peril, since whatever emotional pleasure the drug may induce is promptly overwhelmed by the more profound mental effect of the manipulation and its results.

In these circumstances there is no risk of initiating a fondness for the drug. But the same can scarcely be true of cocaine when it is regularly used for such mild manipulations as passing the Eustachian catheter. This procedure in expert hands is, or ought to be, quite free not only from pain but even from discomfort, so that the use of cocaine after the first two or three sittings is quite unnecessary. If, then, we continue applying the drug, we are certainly running a serious risk of setting up the cocaine habit in our patient. Consequently we should make it a rule to dispense with the drug after the first sittings have accustomed the patient to the passage of the instrument.

Care should also be taken never to let the patient know the name of the anæsthetic used.

Finally, we may remind readers that the local action of cocaine is intensified and its absorption and general action minimised by mixing it with adrenalin solution. The only drawback to this combination is the occasional occurrence in susceptible people of rather violent reactionary phenomena in the shape of sneezing and rhinorrhœa.

D. M.

SOME CASES OF FOREIGN BODY IN THE AIR- AND FOOD-PASSAGES.

BY THOMAS GUTHRIE, M.A., M.B., B.C., F.R.C.S.,

Hon. Laryngologist and Aurist to the Liverpool Royal Infirmary, etc.

The methods of removing foreign bodies from the air- and food-passages have become so much a special branch of laryngology and have reached such perfection in the hands of Chevalier Jackson and a few others that one, like myself, whose experience is comparatively limited, feels some hesitation in recording his adventures in this interesting field. No one regards with more admiration, nor, it may be added, with more envy than I do, the "team-work" on the value of which so much stress is laid: but this is for most of us at present an unrealised ideal. Many, if not the majority, of my own bronchoscopies and œsophagoscopies have been performed with the help of anæsthetists, assistants, and nurses, none of whom had ever before been present at such operations, and often with the instruments of a hospital out-patient department, neither too well adapted for the case in hand nor in the best working order. The value, however, of any method of treatment, to the general public at least, depends very largely upon its accessibility—that is to say, upon the number of those who are able to carry it out with a fair measure of success; and I have ventured therefore to put on record and draw conclusions from some cases which at least demonstrate the value and practicability, even under relatively adverse conditions, of the modern methods of dealing with these accidents.

ANÆSTHESIA.

In most of my cases of bronchoscopy and œsophagoscopy, whether for removal of foreign bodies or for other purposes, in addition to the

local application of cocaine and adrenalin when dealing with the larynx, trachea, or bronchi, I have employed a general anæsthetic—in the earlier cases chloroform, but during the last two or three years open ether. The latter, especially if preceded by an atropine injection, I have found quite satisfactory, but in many cases of coin in the œsophagus in children removal by means of the œsophagoscope is so easily and rapidly effected that in them I now generally dispense with an anæsthetic. When more prolonged or painful manipulations are likely to be required, or when thorough and deliberate examination is necessary, it is to my mind very desirable to employ a general anæsthetic. I have done this not only in most of the fifty-seven foreign-body cases recorded in this paper, but also in many direct examinations made for diagnostic or other purposes, and in none of them has the anæsthetic given rise to any anxiety.

FOREIGN BODIES IN THE AIR-PASSAGES.

So far as my experience goes, removal of foreign bodies from the bronchi by upper bronchoscopy presents *on the average* no more, perhaps even less, difficulty than their removal from the œsophagus. Even in Case 1 (piece of mutton-bone in left main bronchus with well-marked broncho-pneumonia present) the foreign body was at once seen, grasped and removed without difficulty. In Case 3 (pin in left main bronchus of a child aged three and a half) some little difficulty was experienced owing to the small size (5 mm.) of the tube which had to be used, and the absence of forceps sufficiently slender to pass through it without completely obstructing the view.

Case 8, being a failure, which one would hope to avoid in future, may be described a little more fully. A puny, ill-nourished baby, aged five months, was brought to my out-patient department at the Liverpool Royal Infirmary suffering from very definite laryngeal obstruction of about two hours' duration. There was a rather vague history of its having swallowed a fish-bone. Laryngeal stridor, slight cyanosis, and retraction of the chest-walls were all present. I examined the larynx without an anæsthetic by means of a Killian's tube-spatula and found a white body resembling a fish-vertebra lying in the subglottic region. An attempt to grasp it with Paterson's forceps resulted in its becoming dislodged and inhaled down the trachea. I followed it with the smallest bronchoscopic tube available, but failed to find it. Although this examination was performed as gently as possible and lasted only a few minutes, laryngeal obstruction developed later, and a tracheotomy had to be done the same evening. Inferior bronchoscopy on the following day failed to discover the foreign body, and the child died two days later of broncho-pneumonia. Failure in this case was due in the first instance to the difficulty of grasping the foreign body impacted in the very small subglottic space of so young a child. Paterson's forceps were certainly not suitable for the purpose as they themselves occupied a large part of the space, and their blades could not be passed between the walls of the space and the foreign body. In another very similar case (No. 10), that of a child, aged sixteen months, the foreign body (an almond kernel), which had been impacted in the subglottic space for two days and gave rise to much obstruction, was easily removed by direct laryngoscopy; but in such cases in young infants, when there is likely to be any difficulty in grasping the foreign body, it would probably

be wiser to obviate the risk of downward displacement by doing a tracheotomy and inserting a gauze plug above the tube before attempting removal. In cases of foreign body in the bronchus in young infants opinions are still divided between the relative advantages of superior and inferior bronchoscopy; my own feeling in such a case would certainly be in favour of the latter as the easier and safer if less brilliant method.

A somewhat remarkable case was No. 11, that of a girl, aged eleven, in whose larynx a flat piece of rabbit-bone measuring 14 by 21 mm. had been impacted for eighteen months. Since the accident the voice had been hoarse, the breathing noisy on exertion and at times slightly difficult, all of these symptoms having gradually increased during the two or three months before she came under my care. About three months after the accident she spent a month as in-patient in a hospital, where, however, the cause of the symptoms was not discovered. The patient being very intolerant, the larynx could only be examined satisfactorily by the direct method under general anæsthesia. The upper aperture of the larynx was then found to be almost completely closed by rounded œdematous swellings of the anterior, lateral, and posterior walls, no view of the interior being obtainable. A pair of Paterson's forceps, however, having been passed in between the masses of swollen mucous membrane, a hard body could be felt and was detached with some little difficulty and removed. During this process the breathing became greatly obstructed, and it seemed likely that a tracheotomy would be required, but immediately after removal of the bone the obstruction disappeared and the stridor almost entirely ceased. The voice gradually improved, and a fortnight after the operation remained only slightly harsh.

FOREIGN BODIES IN THE ŒSOPHAGUS.

In several cases of meat-bone in the œsophagus, particularly those like Case 30, in which the bone has sharp points, I have been struck with the amount of pain of which the patient complains. It appears that pain only on attempting to swallow *may* be due to an abrasion caused by a foreign body which has passed on or by efforts at removal by means of probangs, but that continuous pain suggests that the foreign body is actually present in the œsophagus. It would of course be unwise to attach very great importance to the patient's subjective sensations in these cases, but the presence of *continuous* pain does seem to me to be of some diagnostic importance, although its absence indicates nothing. The pain is no doubt due chiefly to muscular spasm, and it is most marked when the foreign body is impacted at the œsophageal entrance as in Cases 34 (chicken-bone) and 25 (tooth-plate). Here the foreign body is gripped by the inferior constrictor of the pharynx and even speaking may cause severe spasms of pain.

X-ray screen examination shows a vulcanite tooth-plate well, although even this may be missed, as it was in the first instance in Case 17, unless a diaphragm be used. Bones, on the other hand, are rarely shown, but, as Mr. Thurstan Holland has demonstrated in several of my cases, their presence and situation can usually be determined by the fact that, if bismuth food is taken, a small quantity of it is held up for a few seconds and fails to pass down with the rest. In Case 34, in which a large, thin, flat piece of chicken-bone was impacted

at the œsophageal entrance, the radiosopic examination by Mr. Holland gave an interesting result in that, although the bone itself was not visible, its presence was indicated by the fact that the bismuth stream, as it reached the lower end of the pharynx, was seen to divide into two, with a clear space between, the two streams uniting again lower down.

Of the twelve cases of tooth-plate in the œsophagus, removal by means of the œsophagoscope failed in three, which were successfully treated by cervical œsophagotomy performed by my surgical colleagues, Messrs. Litler-Jones and Bickersteth at the Liverpool Royal Infirmary, and Mr. Monsarrat at the Royal Southern Hospital. All of these occurred, however, among my earlier cases, at a time when I possessed neither dilating-tube nor any means of cutting up a plate *in situ*; while in two of them the external operation was facilitated by the fact that it had been possible by use of the œsophagoscope to dislodge the plate from its original position behind the manubrium and draw it upwards to the upper end of the œsophagus, although not to deliver it into the pharynx. In two or three later cases I have found Brünings' dilator of considerable value, and hope that by its means and by the use of cutting forceps, such as those of Irwin Moore, it will be possible in future to overcome difficulties of this nature.

Of all cases of foreign body in the œsophagus, that of a child of three or four years of age with a halfpenny near the level of the upper end of the sternum is probably by far the most frequent. As a rule, removal by means of the œsophagoscope is easy, without local or general anaesthesia. If, however, any difficulty is experienced I do not hesitate to employ open ether anaesthesia. Occasionally the coin is strangely elusive. It is, of course, quite easy in passing the tube to push down a fold of mucous membrane over the upper border of the coin so that the latter is concealed and altogether escapes notice. Again, it sometimes happens that the coin is really absent from the œsophagus, having become dislodged and entered the stomach in the interval following the radiosopic examination. In one such case, the œsophagus having been found on inspection to be clear and coin shown by screen examination to be lying in the stomach, the child was returned to bed to be discharged from hospital on the following day. Some difficulty in swallowing, however, having been noticed on the following morning, an X-ray examination was made and showed that the halfpenny had evidently been vomited up, and was again lying in the œsophagus as before, behind the manubrium. On this occasion I passed the œsophagoscope while the coin was visible on the screen, and had no difficulty in removing it. Another case, at first rather puzzling, was that of a girl, aged four, who had swallowed a halfpenny three days before coming under my observation. Previous to my seeing her the coin had been shown by X rays to be lying in the usual situation near the upper end of the sternum, and an attempt had been made at a local hospital to remove it with a coin-catcher. This was said to have been felt to hitch against something, but was finally withdrawn without the coin. A later X-ray examination showed the coin to be higher up, about the level of the upper end of the œsophagus or the lower end of the pharynx. The case now coming under my care, I examined with the œsophagoscope and found some irregular transverse tearing of the mucous membrane of the posterior wall of the œsophagus at its upper end, but no coin visible. X rays, however, showed the coin

No. case.	Age and sex.	Nature of foreign body.	Situation	Time before removal.	Method of removal.	Result and remarks.
1	M. 10 years	Mutton bone	Left main bronchus	9 days	Chloroform. Upper bronchoscopy. Brunnings' toothed forceps	Signs of broncho-pneumonia present, but rapid recovery after removal.
2	M. 11 years	Piece of metal pencil-case	Branch of right main bronchus to lower lobe	24 hours	Chloroform. Upper bronchoscopy. Brunnings' toothed forceps	Recovery.
3	F. 3½ years	Glass-headed pin	Left main bronchus, head of pin downwards	2 days	Ether. Upper bronchoscopy. 5 mm. tube Paterson's forceps	Recovery. Some difficulty owing to the narrow tube being almost completely filled by the forceps.
4	M. 6 years	Puff-dart, i.e. pin with wool attached	Right main bronchus, point upwards.	3 hours	Chloroform. Upper bronchoscopy. Double cunette forceps	Recovery. X-ray examination at first showed foreign body in subglottic region and upper end of trachea. It was drawn down into bronchus during a fit of coughing before introduction of bronchoscope.
5	M. 6 years	Cowrie shell	Branch of right main bronchus to lower lobe	9 days	Ether. Upper bronchoscopy. Brunnings' toothed forceps	Recovery. Signs of consolidation present at base of right lung. Screen examination showed shape and situation of foreign body clearly.
6	M. 11 years	Wooden mouth-piece of rubber balloon	Right main bronchus	6 days	Ether. Lower bronchoscopy. Paterson's forceps	Foreign body lay at first in larynx causing complete obstruction. Emergency tracheotomy by boy's own doctor. Rubber balloon later became detached and was coughed out, wooden mouth-piece being inhaled into the bronchus. Recovery.
7	M. 56 years	Celluloid tracheotomy tube	Right main bronchus	24 hours	Cocaine and adrenalin. Lower bronchoscopy. Brunnings' toothed forceps	Recovery. Tracheotomy for laryngeal obstruction due to syphilis, performed nine months previously. Tube detached from plate and inhaled.

8	5 months	Fish-vertebra	At first, subglottic region; later, not known	—	No anæsthetic. Direct laryngoscopy; then superior, and later inferior bronchoscopy. Not successful	Attempt to remove foreign body from subglottic region resulted in its becoming dislodged and inhaled. Not seen by superior bronchoscopy. Later, laryngeal obstruction and tracheotomy. Inferior bronchoscopy not successful. Died of broncho-pneumonia.
9	M. 49 years	Needle	Point in left ary-epiglottic fold, shaft lying across lumen of larynx	2 hours	Cocaine. Indirect method with Mackenzie's forceps	—
10	F. 13 years	Almond kernel	Subglottic region of larynx	2 days	No anæsthetic. Direct laryngoscopy	Recovery. Much stridor and obstruction present before removal.
11	F. 11 years	Thin flat piece of rabbit-bone, 21 x 14 mm.	Larynx	18 months	Ether. Direct laryngoscopy. Paterson's forceps	Recovery. Foreign body was much fixed and completely concealed by edematous swelling of laryngeal mucous membrane.
12	F. 10 months	Open safety-pin. Point down.	Hypopharynx	27 hours	No anæsthetic. Killian's tube-spatula. Paterson's forceps	Recovery.
13	M. 32 years	Sharp thin spicule of bone: length 14 in.	Posterior wall of hypopharynx	of 24 hours	Ether. Tube-spatula. Brünings' forceps	Recovery. A prolang had been previously passed and three-quarters of the bone was embedded in mucous membrane.
14	F. 35 years	Glass-headed pin	Point fixed in posterior pharyngeal wall; head lying over laryngeal entrance	20 hours	Indirect laryngoscopy. Mackenzie's forceps	Recovery.
15	F. 11 years	Pin	Point in posterior pharyngeal wall; head in larynx below anterior commissure of cords	2 days	Ether. Direct laryngoscopy. Paterson's forceps	Recovery. Indirect method was tried and failed owing to firm embedding of point of pin in posterior wall, and impaction of head below anterior commissure. Pin had to be carried downwards in order to disengage the point before removal.

No. of case.	Age and sex.	Nature of foreign body.	Situation	Time before removal.	Method of removal.	Result and remarks.
16	F. 6 years	Pm	Posterior wall of hypopharynx	36 hours	Ether. Tube-spatula. Paterson's forceps	Recovery.
17	M. 29 years	Vulcanite tooth-plate; one tooth, no hooks	Esophagus behind manubrium	3 weeks	Chloroform. Esophagoscope. Benning's toothed forceps	Recovery. Plate rather fixed. Some ulceration of esophageal wall.
18	F. 29 years	Vulcanite tooth-plate; one tooth, no hooks	Esophagus behind manubrium	24 hours	Chloroform. Esophagoscope. Benning's toothed forceps	Recovery.
19	F. 30 years	Large vulcanite plate; two teeth, no hooks	Esophagus behind manubrium	2 days	Chloroform. External esophagotomy by Mr. Lütler-Jones	Recovery. By means of esophagoscope the plate was loosened and drawn upwards to the cricoid region, but could not be made to pass into pharynx.
20	F. 29 years	Vulcanite tooth-plate; two teeth, one hook	Esophagus behind manubrium	24 hours	Ether. Esophagoscope. Benning's forceps	Recovery. Plate much fixed. Removal rather difficult owing to hook.
21	M. 40 years	Vulcanite tooth-plate; one tooth	Esophagus behind manubrium	30 hours	Ether. Esophagoscope. Irwin Moore's forceps	Recovery.
22	F. 30 years	Vulcanite tooth-plate; three teeth	Esophagus behind manubrium	2 days	Ether. Benning's dilating tube. Irwin Moore's forceps	Recovery. Plate much fixed. Dilating tube of great assistance.
23	F. 26 years	Vulcanite tooth-plate; three teeth, sharp points	Esophagus, level of bifurcation	4 days	Ether. External esophagotomy by Mr. Monsurat	Recovery. By means of esophagoscope plate was loosened and drawn upwards to cricoid region, but could not be made to pass into pharynx owing to its large size.

24	M. 28 years	Vulcanite tooth-plate; three teeth	Esophagus behind manubrium	2 days	Ether. Brünings' dilating tube. Irwin Moore's forceps	Recovery. Plate much fixed. Dilating tube very helpful.
25	M. 26 years	Vulcanite tooth-plate; four teeth	Hypopharynx and upper end of esophagus	4 hours	Ether. Esophagoscope. Irwin Moore's forceps	Recovery. Plate somewhat fixed by spasm of inferior constrictor muscle.
26	F. 30 years	Vulcanite tooth-plate; two teeth, one hook	Esophagus behind manubrium	24 hours	Ether. Brünings' dilating tube. Irwin Moore's forceps	Recovery. Removal difficult owing to embedding of hook in mucous membrane.
27	M. 32 years	Vulcanite tooth-plate; three teeth	Esophagus behind manubrium	48 hours	Ether. External esophagotomy by M. R. Bickersteth	Recovery. Plate firmly fixed. Removal by esophagoscope failed. No dilating tube was available.
28	F. 28 years	Mutton bone; piece of rib, 1 in. long; sharp ends	Esophagus upper end of sternum	24 days	Ether. Esophagoscope. Brünings' toothed forceps	Recovery. Bone lay with long axis transverse. Much pain complained of.
29	F. 35 years	Beef bone; flat triangular piece of rib, 7×4 in.; sharp points	Esophagus level of bifurcation	24 hours	Ether. Esophagoscope. Brünings' toothed forceps	Recovery.
30	F. 39 years	Sharp-pointed piece of beef bone, $1\frac{3}{16} \times \frac{5}{16}$ in.	Esophagus behind manubrium	3 days	Ether. Esophagoscope. Brünings' toothed forceps	Recovery. Much pain complained of before removal. Sharp needle-like points of bone deeply embedded in esophageal wall.
31	F. 15 years	Triangular piece of beef bone, 14×3 in.	Esophagus behind manubrium	3½ hours	Ether. Esophagoscope. Brünings' toothed forceps	Recovery.
32	F. 28 years	Flat quadrangular piece of beef bone, $7 \times 1\frac{1}{2}$ in.	Esophagus behind upper end of sternum	3 days	Ether. Esophagoscope. Brünings' toothed forceps	Recovery.

No. of case.	Age and sex.	Nature of foreign body.	Situation.	Time before removal.	Method of removal.	Result and remarks.
33	M. 45 years	Small splinter of bone, $\frac{1}{2}$ in.	Hypopharynx, posterior wall, lower end	2 days	Eth'er. Esophagoscope. Brünings' double-curette forceps	Recovery. An abscess present containing foul pus with some swelling of neck, which only subsided five days after removal of bone.
34	M. 43 years	Flat triangular piece of chicken-bone, $1 \times \frac{1}{2}$ in.	Upper end of esophagus and lower pharynx	1 hour	Eth'er. Esophagoscope. Brünings' toothed forceps	Recovery. Before removal much pain present even on phonation, due to spasm of inferior constrictor.
35	M. 33 years	Metal hood-protector, three spikes.	Esophagus, upper end	24 hours	No anaesthetic. Tubo-spatula. Paterson's forceps.	Recovery.
36	F. 11 months	Flat circular metal shoe ornament.	Esophagus level of upper border of sternum	7 days	No anaesthetic. Tubo-spatula. Paterson's forceps	Recovery. Repeated attempts had been made elsewhere to remove the foreign body with a coin-catcher, and the esophageal wall was swollen and excoriated.
37	M. 68 years	Large mass of beef	Esophagus level of fourth dorsal vertebra	24 hours	Eth'er. Esophagoscope. Double-curette forceps	Recovery. The mass of meat had caused complete obstruction. The esophagus was free from disease.
38	F. 6 months	Sixpenny-piece	Esophagus behind manubrium	2 days	No anaesthetic. Esophagoscope. Paterson's forceps	Recovery.
39-57	24-5 years	Halfpennies	Esophagus behind manubrium	Various periods from a few hours to 5 weeks	Ether or no anaesthetic. Esophagoscope	All recovered.



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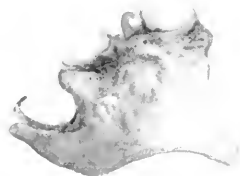
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to be still present, and I finally extracted it by means of a Killian's tube spatula and Paterson's forceps from beneath the mucous membrane of the posterior wall of the lower pharynx. The coin was an old one, and its thin, worn edge had perforated the posterior wall of the œsophagus, and been drawn up behind the mucous membrane of the hypopharynx during the attempt at removal with the coin-catcher. Such cases illustrate *the danger of blind efforts* at the removal or propulsion of foreign bodies in the œsophagus. Fortunately the damage in this instance was not irreparable and the patient made a good recovery, but, as is well known, this is by no means always so, and the use of probangs, bougies and coin-catchers in these cases can nowadays scarcely be defended.

DESCRIPTION OF PLATE.

FOREIGN BODIES REMOVED FROM AIR- AND FOOD-PASSAGES.

1. Rabbit-bone, in larynx for eighteen months (Case 11).
2. Mutton-bone, in left main bronchus (Case 1).
3. Piece of metal pencil case, in branch of right bronchus to lower lobe (Case 2).
4. Puff-dart, in right main bronchus (Case 4).
5. Cowrie shell, in branch of right bronchus to lower lobe (Case 5).
6. Celluloid tracheotomy tube, in right main bronchus (Case 7).
7. Wooden mouth-piece of rubber balloon, in right main bronchus (Case 6).
8. Beef bone, in œsophagus (Case 31).
9. Sharp-pointed bone, in œsophagus (Case 30).
10. Tooth-plate, in œsophagus (Case 20).
11. Metal boot-protector, in œsophagus (Case 35).
12. Tooth-plate, in œsophagus (Case 21).

NON-SUPPURATIVE LABYRINTHITIS (MENIERE'S DISEASE) ; OPERATION ; RECOVERY.

BY ADAIR DIGHTON, F.R.C.S.,

Hon. Surgeon, Eye and Ear Infirmary, Liverpool.

THE reports of cases of this disease treated and cured by operation are so few and far between that a case which came under my observation in 1915 seems worth while reporting.

Mr. W—, a dock board inspector, first consulted me on October 25, 1915, on account of repeated attacks of vertigo. These in his occupation were exceedingly dangerous and caused him a great deal of worry. The history that he gave me was, in his own words, as follows :

" My first attack occurred on the Liverpool landing-stage on August 18, 1910. I suddenly fell twice in ten minutes, but remained conscious. On my arrival home I was violently sick and lay prostrate for forty-eight hours. Intervals of several months then occurred between the attacks.

" On December 16, 1913, I had a very severe falling attack, but from December, 1913, a swishing noise like ' a band saw on a log ' preceded and accompanied an attack.

" On August 29, 1914, I had a very severe attack in the street with the same after-effects.

" From September 8 to September 19, 1914, the attacks were daily, and I was prone until October 4, 1914. Intervals of three or four months then occurred between attacks until six weeks ago, when the swishing noise became continuous and attacks might develop at any time.

On October 18, 1915, the attacks became daily ones and lasted until October 23, 1915."

This history in a man between the ages of forty-five and fifty, a non-smoker and teetotaller, with a normal blood-pressure, seemed to me to be typical of what Lake calls "labyrinthine vertigo due to progressive middle-ear deafness."

On examination of the right ear the tympanic membrane was normal, the hearing was good, caloric test normal, and there was no tinnitus: but in the left ear, which had been deaf to a slight extent for many years before the first attack, the membrane was thick and retracted, the hearing bad, Rinne test negative, Weber test lateralised to the right, and Schwabach increased, with the hearing for high tones markedly diminished. The caloric test carried out with water at a temperature of 27° C. produced a violent reaction with 15 c.c. The turning test was not attempted. Tinnitus was marked in the left ear.

Without going into the realms of pathology, it seems to me that in this case I had to deal with a case of hypertension and hyperirritability of the labyrinth, very similar to the analogous condition occurring in the eye under the name of glaucoma. The hyperirritability was evidenced by the fact that the following causes influenced or excited the onset of an attack:

- (1) Looking down from a height (especially upon water with the sun on it).
- (2) Looking through railings in sunlight.
- (3) The rapid movement of a body of people in the street.
- (4) Sitting in a train or tram and seeing objects pass rapidly.

Now these causes are analogous with the causes that produce the symptom-complex of *mal-de-mer*, and, as Isaac Jones says, this, as anyone who has suffered from it knows, is "identical with such phenomena seen in cases of pathological conditions of the internal ear—the so-called Menière's disease." As he points out in his book, the cause of *mal-de-mer* is essentially a hyperirritability of the auditory nerve or its nerve-endings, and this has been experimentally confirmed by Kreidl by experiments on animals before, and after, section of the auditory nerve.

With these ideas in my mind, my only advice could be that of immediate and radical operation, and I was supported in this by Lake, as the following extract from his epoch-making paper shows. He writes: "When, however, one meets with patients in whom the vertigo is severe and often repeated, where the deafness is of a high degree, where the stapes is obviously fixed by osseous formation, where internal and external medication are unavailing, and where the patient's state is such that a continuation of life under such conditions is impossible by reason of their inability to earn their own livelihood, or some equally potent cause, then one should, without hesitation, place before them the advisability of operation."

This patient had had every conceivable treatment under seven other aural surgeons before coming to me, and was in the position of having to give up his work if something could not be done.

On October 27, therefore, under chloroform anaesthesia, I performed a very complete radical mastoid operation on his left ear of as wide an extent as possible, and after light packing with ribbon gauze returned patient to bed. Two days later, again under chloroform anaesthesia, I removed packing and performed a complete Jansen-Neumann intracranial labyrinthectomy. In this operation the bone over the anterior wall of the lateral sinus was removed, and from this point forward the

inner table was chiselled away until the capsule of the labyrinth was reached. The dura was carefully separated up and the bone removed in thin shavings, always working parallel to the posterior surface of the petrous bone in order to avoid the superior petrosal sinus above and the jugular bulb below. First the convexity of the posterior canal was defined and removed when the opening of the canal itself came into view, to be soon followed by the opening of the common limb of the posterior and superior canals above it and the lumen of the external or horizontal canal below it. This last was then traced forward until the vestibule was reached. In doing this the external wall was guarded, and the internal wall undermined and chipped away to avoid injury to the facial nerve. A probe was then passed into the vestibule from the oval window in the anterior part of the operation area to confirm its locality. The basal whorl of the cochlea was now removed, the whole operation area was flushed out with normal saline, loosely packed with ribbon gauze and the patient returned to bed.

There were no after-complications beyond a slight facial paresis, due I think to tight packing of the cavity on top of a bare nerve. This passed off before the end of a week, and the patient returned to his work on the dock in February, 1916.

I did not see him again until my return from service with the R.A.M.C., when in response to a note he attended in October, 1918, exactly three years after his operation.

He told me that owing to the war his work had tremendously increased—he has to inspect every boat coming in or going out of the port—but that from the day he started work after the operation he had never had a symptom of any sort referable to the ear. He has no vertigo, no tinnitus, and no headache, and was never in better health. On examination his ear is dry and clean and there is no reaction to the caloric test.

I have purposely deferred publishing this case in order to allow sufficient time to elapse after the operation to enable me to report it as a definite cure, and I think that now, after three years, I am justified in doing this.

ANGEIOMA OF THE LARYNX: REPORT OF A CASE¹

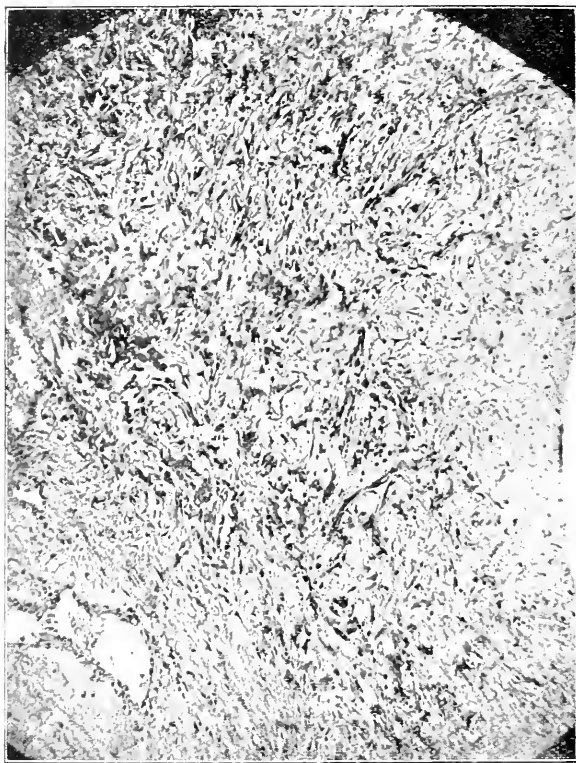
By RICHMOND MCKINNEY, A.M., M.D., F.A.C.S., Memphis, Tennessee,
Professor of Diseases of the Nose, Throat and Ear, University of Tennessee
College of Medicine; Oto-Laryngologist to Memphis General, Baptist
Memorial, and Lucy Brinkley Hospitals.

It is the comparative rarity of angioma of the larynx which primarily causes me to report this case, but there are some features about the clinical history of the case which lend to it unusual interest. Emil Mayer (13), in adding a case of angioma of the larynx to the literature last year, said that at that time, after exhaustively reviewing the literature, with inclusion of the case reported by him the total number reported was forty-one. The literature of the subject is given by Mayer at the close of his article, and as an appendix to the case which I am to report I shall quote the references as given by Mayer. Indeed, Mayer's

¹ Reported to the meeting of the Eye, Ear, Nose and Throat Section, Tennessee State Medical Association, Nashville, April 5, 1917.

article considers the diagnosis, symptoms and treatment of angioma of the larynx so thoroughly that it is unnecessary in the present report to detail these.

On May 19, 1915, I was consulted by G. M—, aged thirty-five, of Memphis, who said that he had been hoarse since December 1 of the previous year. At times this condition would improve, but was never entirely gone. There was no pain at all in the throat at any time, but he suffered with voice-tire and exhaustion. There had been some loss of weight, this varying; and at one time he had been from 20 to 30 lb. off, but since a recent trip to the Gulf Coast this was now about normal. Four years ago he was infected with lues. Various secondary



symptoms were manifested during later months, and at one time, some three years ago, and continuing for about a year, he had some paresis of the left arm and hand. There was much occipital neuralgia at various times. Wassermann was positive at this time. Insomnia and other symptoms referable to the nervous system were present. Thirty-five doses of salvarsan had been given him, the last being seven or eight months ago; he also had had intraspinal injections of mercury, and received considerable other treatment. Since the advent of his hoarseness Mr. M— had been under the care of a local specialist for treatment of this condition. Tuberculosis was suspected in his case, although tubercle bacilli were never found in his sputum, and surrendering a good position he went West for his health, remaining there several months. He returned to Memphis about two months before I saw him; but the hoarseness continuing, with some loss of weight, he went to the Gulf Coast, where his stay of several weeks brought increase in weight and general physical betterment, but the hoarseness persisted.

At the suggestion of his physicians Mr. M— consulted me, and I found a

subglottic tumour, apparently about the size of a large pea, bluish-red in colour, and with a raspberry-like surface, which was attached anteriorly beneath the right cord by a pedicle. With respiration the tumour would flop up into the glottis, which accounted for the exhaustion from difficult breathing, which Mr. M—— said had at times been present in his case. Two days later, with local anæsthesia and by the indirect method, the tumour was removed without great difficulty. The report of the pathologist was that this growth was an angioma. In a few days Mr. M——'s voice was entirely restored, and the improvement in his physical condition and nervous state was so marked as to be immediately noticeable to his friends. Several times since removal of the growth I have examined Mr. M——'s larynx, but there is no evidence of recurrence.

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Note.—At the Thirty-ninth Annual Meeting of the American Laryngological Association, held at Atlantic City, N.J., May 28, 29, and 30, 1917, Charles W. Richardson, of Washington, D.C., reported a case of lymph-angioma of the larynx removed endolaryngeally, thus adding the forty-third case to the literature.

VERTIGO AND NYSTAGMUS ASSOCIATED WITH INFLATION OF THE EUSTACHIAN TUBE.

By SYDNEY SCOTT, M.S., F.R.C.S., late temporary Major, R.A.M.C.

THE occurrence of vertigo and nystagmus during inflation of the tympanum is occasionally observed. The opportunity of noting these phenomena in a flying officer enables me to give the following account of his case.

In May, 1918, Lieut. G. F. S—— had obstinate obstruction of the left Eustachian tube, which gave him trouble when flying. Repeated attempts to inflate the ear by every recognised method, including catheterisation and bougies, failed to produce any change in the appearance of the drum or state of hearing until June 4, when inflation by catheter was successful for the first time and was associated with slight dizziness. The sudden entry of air was accompanied by only a faint *râle*, but enough air entered to cause the drum to resume its normal position: the patient noticed that his own voice sounded clearer, and he could hear the Bezold fork 16 d.v., which was previously inaudible.

June 5: The tympanic membrane had returned to its former invaginated position and was immobile during repeated attempts to inflate the ear by Valsalva's method (whereas the right drum was seen to be distended every time the effort to inflate the left tympanum was made).

When the left ear was again inflated by catheter the dizziness was much more marked, and accompanied by strong forced movements of the head and nystagmus. The giddiness subsided, but before removing the catheter the inflator was compressed a second time and this again provoked intense vertigo, forced movements and nystagmus, while the patient exclaimed—"I'm giddy again, but I'm going the opposite way"—in fact the direction of the forced movements of the head and eyes, like the subjective sensations of movement, were all *reversed*. In the first instance the head was forced to the right, and the nystagmus was to the left; in the second instance the head was forced to the left, and the nystagmus was to the right. In each case the head movement was a combination of lateral flexion and axial rotation. The nystagmus, which was extremely violent, was horizontal, with a terminal rotary excursion of the upper meridian outwards and downwards.

Previous to treatment the drum and ossicular chain were compressed inwards; the compression on the outer surface of the drum, being sufficient to produce invagination, would be transmitted to the labyrinth principally by the inward displacement of the stapes, though possibly by some increased tension on membrana secundaria too. By the first inflation only sufficient air entered the tympanum to permit the drum to return to the normal state, and the pressure on the labyrinth was suddenly relaxed, *i. e.* the labyrinth passed from a state of positive to one of neutral tension: the movements of the head were to the right and the nystagmus was to the left.

In the second stage of inflation the tympanum was hyperdistended, by reason of the catheter having to be passed unusually far up the tube to obtain inflation at all. Hyperdistension within the tympanic cavity probably acts both on the stapes and membrana secundaria, momentarily raising the labyrinthine pressure from a neutral to a positive tension: the resulting forced movements of the head were to the left, and the nystagmus was to the right. Simultaneous hyperdistension of the right and left tympana instantly arrested the vertigo, produced by unilateral inflation of the left ear alone.

SOCIETIES' PROCEEDINGS.

ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

June 1, 1917.

President: Mr. T. MARK HOVELL.

(Continued from p. 29.)

Hyper-adduction of the Left Arytæoid Cartilage.—**L. H. Pegler.**—Patient, a male, aged thirty, has always been hoarse; voice weak and easily fatigued. The cords approximate imperfectly, owing to the left arytæoid overlapping its fellow on vocalisation. The case, which appears to be congenital, is shown on account of its simulating in one respect the behaviour of an arytæoid when the opposite cord is paralysed.

Dr. JOHNSON HORNE: I should like to hear the idea of others as to

whether there is movement in the right cord. It did not seem to me to approximate at all. If the right cord is fixed, what is the cause? Perhaps there is some long-standing condition which accounts for an over-action of the healthy cord.

Dr. H. J. BANKS-DAVIS: I did not think the right cord moved. The left cord seemed to be at a higher level, and swung across the arytenoids.

Capt. SMURTHWAITE: I agree with what Dr. Banks-Davis said, and I therefore ask if he has had chest symptoms or anything involving the nerve. There is hyperaction of the left cord, so that it comes behind the right cord, nearly touching it. The right cord seems almost fixed in the cadaveric position.

Dr. W. HILL: The right cord shows post-paralytic contracture.

Dr. BROWN KELLY: At first glance it looked to me like "crossing of the arytenoids," which occurs physiologically, as exemplified in Case 2, shown by Sir StClair Thomson. In the case under discussion, however, the cords do not quite meet; it is difficult to say which is at fault, but as the left arytenoid is inclined forward, as in recurrent paralysis, probably the lesion is situated on this side of the larynx.

Dr. DONELAN: Sir Morell Mackenzie showed me a case in which the arytenoids overlapped in this manner, and he said it was very rare to see it in a normal larynx.

Dr. PEGLER (in reply): In spite of adverse criticism to my stated opinion I am disinclined to change it, so long as I realise that members who differ from me have not had the opportunity to watch the movements in this patient's larynx as leisurely and carefully as myself. I feel further strengthened owing to the independent corroboration of a competent laryngologist to whom I referred the case. We both believed that we have seen this peculiar overlapping by one arytenoid cartilage over another before. I am glad, however, that at least one member who has spoken (Dr. Donelan) agrees with this view, quoting Sir Morell Mackenzie as having described such a condition, though rarely seen in a normal larynx. I hope to show the case again in the autumn session if any clearer evidence of palsy becomes manifest to me.

Epithelioma of the Larynx Ten Months after Laryngo-fissure.

—Sir StClair Thomson.—Patient, a lady, aged forty-six, had been hoarse for no less than one year and four months when she presented herself in August, 1916, with a rough, pale red, cauliflower-like infiltration of the right vocal cord, involving the posterior two-thirds, and most marked over the vocal process. The movement of the cord was sluggish. As the growth projected well above the surface, a portion was removed by the indirect method with Mackenzie's forceps, and reported on as follows: "This tiny fragment shows the histological structure of an undoubted epithelioma."

Laryngo-fissure on August 9, 1916. The growth was found to extend right back to the arytenoid, and the naked-eye examination showed that it must have extended close to the arytenoid cut. A further portion was therefore removed from the arytenoid. Tracheotomy tube was removed at the end of operation. The report of the microscopic examination was as follows:

"The specimen comprised four pieces of tissue:

"(1) Marked 'main growth.' This piece has been cut in three pieces—anterior edge, posterior edge, and through the centre. In the centre is

a typical epithelioma, the columns of cancer-cells penetrating into the tissues as far as the small muscles. The removal is wide of the growth above and below, and towards the perichondrium and anteriorly, but not posteriorly, where the growth extends to the arytaenoid region.

"(2) Marked 'round the arytaenoid.' This piece in all probability completes the removal of the growth, for although the cancer is to be seen along one edge of it there is none on the other edge.

"(3) Marked 'deep perichondrium.' This piece consists of small muscle, blood-vessels, and areolar tissue. There is no sign of the growth in it.

"(4) Marked 'aryepiglottic fold.' This piece consists largely of mucous glands. It is free from growth."

Ten months have passed. The patient has a good voice.

The following are interesting points in this case:

(a) The patient is a female and comparatively young. I have only performed laryngo-fissure for epithelioma in two female patients in comparison with over thirty males.

(b) The invasion of the arytaenoid region involved extensive removal, and this has been followed by some cicatricial contraction and slight glottic stenosis.

(c) The voice is as good as before the operation, and there is only slight dyspnoea on exertion.

N.B.—The patient has not been inspected from March 5 until to-day (June 1).

DR. JOHNSON HORNE: It is difficult to discuss this case, as we have so little to go upon. We have seen the patient, who is cured, but we have not seen the growth. I have been a histologist in my time, and I have got into hot water for not seeing carcinoma of the vocal cords when it ought to have been there. And I think I can say, without hesitation, that there is no disease more frequently diagnosed where it does not exist than cancer. We should like to have an opportunity of seeing the growth which was removed from this patient, so that we may be able to revise our stereotyped notions on epithelioma of the vocal cords.

SIR STCLAIR THOMSON (in reply): I welcome Dr. Horne's suggestion; in fact, I shall be glad to submit the specimen to a morbid growths committee, or to a subsequent meeting of the Section, because I think something can be learned from these cases—I have had thirty-two cases, and have the sections of all of them. Some were so slow of growth that there was as much as a seven years' history of hoarseness before I saw the patient. Others I have myself watched for a whole year. I recently operated upon a case which I watched for a year, and yet when it came to laryngo-fissure I was astonished to see how small was the nodule of growth. This very slow growth of epithelioma of the vocal cords must be a subject of pathological interest to morbid histologists, and some light might be thrown on the whole subject of cancer by the study of these sections. Perhaps they might all be submitted to a committee, who might give us a report upon them. I am rather disappointed over to-day's case; it is only the second in which the patient complained of some stenosis, and there is no doubt that she does not get enough air through her larynx. This growth was close to the arytaenoid, and when I removed it I examined it with the naked eye and with the touch, and felt that the growth went so near the posterior extremity of the cord that I must remove some more, so as to be sure of having gone wide of the growth. One of the reports shows it was fortunate that I did so. Then

I got nervous about recurrence and removed a little more still, which proved to have been unnecessary. I fear she will have to have a tracheotomy tube inserted and wear it permanently, as it is not worth while to put her to the trouble of wearing an intubation tube. The case shows the liability to stenosis when the arytenoid end of the cord is extensively removed, but it is a condition in which one may be excused causing stenosis if the patient's life is saved.

Tuberculosis of the Larynx under Treatment with the Galvano-cautery.—**Sir StClair Thomson.**—This gentleman, aged sixty-three, was admitted to a sanatorium with tubercle bacilli in his sputum and mischief in both apices, so that he was included in Group II. There was a deposit with deep ulceration in both vocal processes, more marked on the left and extending along two-thirds of the corresponding cord. After two months in a sanatorium he had his first treatment with a galvano-cautery in November, and this was repeated in January, March and April. When last inspected two weeks ago the right side had completely healed, and it was doubtful whether the slight catarrh still remaining over the left vocal process was due to tubercular deposit or to the scar of the cautery.

Patient still has tubercle bacilli in his sputum, but the advantage of arresting mischief in the larynx is important, as he is by profession a tutor.

Extensive Tuberculosis of the Larynx, completely cicatrised under Sanatorium Silence and Galvano-cautery Treatment.—**Sir StClair Thomson.**—A schoolmaster, aged twenty-nine, had suffered from general symptoms for fifteen months and hoarseness for three months, when he was admitted to a sanatorium on April 29, 1915. He then had a temperature, tubercle bacilli in his sputum, and lesions of two lobes in each lung. He had tubercular deposit in the epiglottis, both arytenoids, and both ventricular bands, with ulcerating infiltration along the edge and inner surface of both vocal cords. The left vocal cord was nearly fixed. The patient was put on strict silence.

Progress at first was slow, and it was not until March 24, 1916 (*i. e.* after twelve months' sanatorium treatment) that the left cord became mobile, and not until June, 1916 (*i. e.* until fourteen months' watching) that the infiltration of the epiglottis and arytenoids had subsided.

The galvano-cautery was applied in July, August and September of 1916.

It will be seen that the larynx now appears completely healed and free from deposit or abrasion. There is much scarring of the larynx, and the rough voice is chiefly produced by the vocal bands.

When the patient came under observation first in April, 1915, he had an otorrhoea on the right side which had come on painlessly. The drum is now closed, but recently he has developed a similar condition on the left side. It is likely these lesions are also tubercular.

It will be noted that the case has required much time and patience. The patient is still living up to sanatorium principles and supporting himself by rearing chickens. He has been at his "cure" for two years. It took fourteen months before his larynx was ready for the cautery. It has now been cicatrised for seven months, but he still has tubercle bacilli in his sputum.

DR. BROWN KELLY: I should like to ask Sir StClair Thomson whether we are to gather from this case that he is an advocate of the use

of the galvano-cautery in the treatment of laryngeal phthisis in patients whose general condition is fairly good. Shortly after I began practice the surgical treatment of laryngeal phthisis was boomed. I went to Warsaw, and saw Heryng remove large pieces of infiltrated arytenoid, ventricular band, and epiglottis. You will remember that he came to London, and, in his forceful manner, told us of the value of his method. Papers were also translated and published in the JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY giving his statistics of cures and improvements. I mention these facts to show that although my present attitude is one of very restricted interference, I was brought up otherwise. Heryng's treatment is now limited almost entirely to the removal of the diseased epiglottis for the relief of dysphagia. Is the galvano-cautery going to fare better? In Scotland we see many cases of tuberculosis of the nose, and in my experience, in spite of thorough treatment by curetting and applying the cautery and various medicaments, it is very difficult to effect a cure. Now, if we have difficulty in the nose, where the disease is so accessible, and in patients whose general condition is favourable, what can we expect in the larynx? I shall be glad if Sir StClair Thomson's great experience in this matter allows of his contradicting what I have said.

DR. BARDSWELL: It should be stated that in these two cases the treatment by galvano-cautery followed an extended course of sanatorium treatment. Both these patients were treated in the King Edward VII Sanatorium. Case 2 was one of acute pulmonary tuberculosis involving the upper and lower lobes of both lungs; in the larynx there was also advanced tuberculous disease. On admission, the patient had marked fever, and was in poor general health. It was not until twelve months later that Sir StClair Thomson operated upon him. During this period the patient's condition had improved most materially. He had gained $1\frac{1}{2}$ st., which more than restored him to his normal weight; he had lost his fever, and was doing heavy work as manager of the sanatorium poultry farm. At this date he was a case of apparent arrest of pulmonary tuberculosis, although tubercle bacilli were still in the sputum. The laryngeal disease had improved extraordinarily, as the result of general treatment and prolonged vocal rest, but still showed evidence of active disease. The time had now arrived for the use of the cautery. The result you have all seen. After following Sir StClair's work at the sanatorium for some six years, I have come to look on the galvano-cautery, in most cases, as a means of completing the work of the sanatorium. Invariably, in a seemingly suitable case, Sir StClair Thomson, before deciding to operate, asks me—"What is this patient's condition and prospect from your point of view?" If I can say that the patient has lost all symptoms of active disease, and can take considerable exercise without producing fever—in other words, that he is on the rising tide of convalescence, local and general—Sir StClair Thomson goes forward; otherwise he does not interfere. I have had cases of active consumption sent to me from London and elsewhere in which the cautery had been applied with deplorable results. So far as I can judge, the galvano-cautery is likely to benefit only when the patient is able to live under good hygienic conditions, and when what we may term natural cure has commenced both in the lungs and in the larynx. This case also illustrates one of the difficulties of a consumptive. It is rarely that a patient can afford anything like two years of sanatorium treatment such as this patient has enjoyed. He owes his long residence to his having been

appointed to the charge of the sanatorium poultry farm. But for this prolonged sanatorium treatment I am convinced that Sir StClair Thomson would never have had the occasion, probably not even the opportunity, to operate on his larynx. Briefly to summarise my experience: I would say that to apply the cautery to an advancing lesion in the larynx results usually in an aggravation of the condition. For success, the cautery should be used in association with the best possible general conditions, preferably in a sanatorium, and only in cases in which natural cure is in progress.

Dr. JOBSON HORNE: I would go a stage further than the last speaker has gone, and say that if a patient has proper sanatorium treatment the cautery is not required at all—that is to say, the disease of the larynx invariably goes *pari passu* with the disease in the lungs. Given an ulcer in the larynx, you may be sure the man has at least one cavity in the lungs, and if you can heal that, the larynx will heal. It is best to leave the larynx alone once it has commenced to heal. It is a pity to bring into the discussion cases of tuberculosis of the nose, because those form a different category.

Dr. KELSON: While agreeing as to the importance of sanatorium treatment, I cannot agree with these two gentlemen, because I have seen cases cured by galvano-cautery, other treatment having failed, and I have a case attending the hospital who was at Ventnor, and his lungs were cured there, but they could not get his larynx right. At the hospital, with cautery treatment, his larynx quite healed. It is true he has had recurrences at intervals of six or seven months, but the cautery cures these recurrences. Seven or eight years ago I showed a case at this Society apparently cured, the patient being a postman. He had not had sanatorium treatment, but the galvano-cautery brought about what appeared to be a complete cure. [Dr. JOBSON HORNE: Was there a history of syphilis? It does not sound like pure tubercle.]

Mr. CLAYTON FOX: I have seen for some time at the Brompton Hospital cases of tubercular infiltration of the larynx treated by galvano-puncture, and I can say, without hesitation, the results on all occasions have been good. The cases were not acute ones. In a case I had in private practice lately, the patient had pain in his ear from an infiltration of one arytenoid and ventricular band. He had undergone all kinds of treatment—insufflations of carbamide powders, and alcoholic infiltration of the superior laryngeal nerve—but even this only gave relief for a time. I applied the puncture cautery at intervals of ten days fairly deeply, making four punctures at a time. In a short time the arytenoid resumed its normal size and appearance. I have seen a good deal of treatment of tuberculosis of the larynx by the galvano-puncture, and I can say it appears to be excellent treatment, provided the patient has not a continued high temperature—in other words, provided the tubercle is not exceptionally active. There must, of course, also be as much hygienic treatment as can be brought to bear on the case, and this should come first; but galvano-puncture, as far as I have seen, has been absolutely successful.

Sir STCLAIR THOMSON (in reply): This is such a wide subject that one cannot, in a short reply, express oneself with all the saving clauses which are necessary, especially as there is nothing more kaleidoscopic than tubercle. The galvano-cautery should only be brought in when the case promises to, at least, become arrested; it is of no use putting patients to the trouble and annoyance of it if they are likely to die of their tubercle

in two or three years, because death in these cases comes from the disease in the lungs. The two patients I have shown to-day still have bacilli in their lungs, and very likely they will die before their due time; but, in the meantime, they can use their voices—an important matter, as one is a schoolmaster and the other a tutor. The indications for which I have been asked were given in Dr. Bardswell's remarks. I cannot agree with Dr. Jobson Horne when he says disease of the larynx goes *pari passu* with the disease of the lungs. In some cases that may happen, but the lungs may improve and yet the larynx may be going downhill. On the other hand, the larynx may so improve under the hygienic conditions that, with silence, Dr. Bardswell is able to tell me I can go ahead with the cautery; or he may say the patient is still erratic, that he has little bouts of temperature, that he cannot stand work, that he is not putting on weight, that he is discontented—an important matter—and then I do not use the cautery, although the larynx seems to require it. And I do not agree with Dr. Horne that these cases get well without the cautery, for I have watched cases for years after they have left the sanatorium. I have shown here a clergyman who was in the sanatorium where I was a patient fourteen years ago. He tried eighteen months' silence, and could not get arrest in his larynx. At last I applied the cautery, and within a year he was again preaching and enjoying it. I have not looked through my records, but I do not think I have had, in private, thirty cases of lasting cure of laryngeal tubercle, whereas I have had over thirty cases of malignant disease, and I would sooner have a malignant growth on the vocal cord than I would have tubercle of my larynx, because the cases of the latter which are suitable for the galvano-cautery and cure are few and far between. As for doing it on patients in an average clinic who have not gone through sanatorium treatment, I would not embark on it at all. I agree with Dr. Bardswell that the chief necessity is to get the patient's resistance raised. I do all my applications by the indirect method.

Saddle-back Nose, consequent on a Resection of the Septum.—

Sir StClair Thomson.—Patient presented himself because of his nasal deformity and unrelieved nasal stenosis. For the latter complaint he reports that he had an operation on his septum elsewhere under chloroform; gauze plugs were kept in for forty-eight hours, and at the end of that time he left hospital. On his return home the same day his friends noticed the falling-in of his nose, and this increased during the week, at the end of which time he states it was as marked as it is now. Unfortunately, he never returned to his hospital to report himself or secure treatment.

He has a marked saddle-backed nose, apparently from collapse of the septal cartilage. The septum is intact and plumb in middle line. There is a puckered scar on each side, suggesting that the deformity may have resulted from a septal abscess which was not evacuated in good time. No cartilage is to be felt anteriorly in the septum. There is free space on each side. The patient had a large pad of adenoids and very follicular tonsils. These were removed on April 1. It is now proposed to try to remedy the external deformity by a subcutaneous injection of paraffin. The patient is shown before this is done to elicit opinions on the cause and prevention of the collapse of the bridge of the nose. I have never had a case of collapse, although I have practised this operation since the year 1903.

Mr. HARMER: I am interested in the question of the treatment of depressions of the bridge of the nose. At St. Bartholomew's Hospital we had a large number of cases of paraffin injections in the nose, performed many years ago by Mr. Walsham, and at the time they looked good results; but later some of them returned in a bad state. One man, for instance, had so much fibrosis resulting from his injection of paraffin that the nose was thickened to more than twice its original size, and he no longer had binocular vision when looking straight ahead. I should like to ask whether other members have seen bad results from injections of paraffin. Of recent years we have abandoned paraffin injections at the hospital in favour of transplantation of bone or cartilage, which can be obtained from the seventh or eighth rib, and can be accurately shaped, so as to make an almost perfect nose. If necessary, more than one piece can be placed in the nose—a central fragment and two lateral ones. If suitable care is observed in transplanting the cartilage there is no reaction, either at the time or at a remote date, and no scarring, because only a puncture incision is necessary. If the nasal cavity is aseptic, cartilage can even be implanted from inside.

Mr. NORMAN PATTERSON: I have seen very good results follow taking the septal cartilage for the purpose. It is removed by submucous resection.

Dr. H. J. BANKS-DAVIS: What is the cause of the falling-in of the bridge of the nose? I never operate upon any lady who is at all good-looking without telling her or the husband that there is a chance the shape of the nose may be altered, and often that statement deters them from having it done. In this case the cartilage seems to have been removed too high up. If that is done, I think that it is due to wrenching away of the cartilage, instead of using sharp cutting forceps, which is liable to displace the lateral cartilage. It is not possible to alter this by paraffin; all you may do is to make the nose broader and flatter.

Dr. W. HILL: Submucous resection should not be accompanied by any deformity; I do not expect it in my cases, and so I do not do paraffin injections.

Mr. DAWSON: Sinking-in of the nose is not very rare. In the last five or six years I have seen five cases after the Killian operation which was done by men of repute, cases in which the end of the cartilage has sloughed or been removed. The patients complained of dropping-in of the end of the nose, and on putting the finger on the end of the nose it sank in easily. With regard to the operation for repair I have a case now, into whose nose I introduced a piece of cartilage from another patient's septum. It did not do at all well.

Dr. DONELAN: Leaving the packing in for forty-eight hours appears to have had much to do with the unfortunate result in this case. I have notes and drawings of over 5000 septums upon which I have operated since 1889, my first case having been done without adrenalin. I have never had a septal abscess or seen such a result as this. I do not think operation on the cartilage alone remedies the nasal obstruction, as the most important deformity occurs at the chondro-vomer suture, and in this instance the removal has been carried too far upward and not far enough back. I have used paraffin with good results, mostly in syphilitic cases, but also in some four others in which the sinking-in of the nose was the result of injury, as from foreign bodies, during childhood. The paraffin injections were followed sometimes by fibrosis in the syphilitic cases but not in the others. If paraffin is injected in this case I should

recommend supporting the sides of the septum by means of Adams' forceps or by a small screw clamp during injection, which might be done from within or without.

Dr. JOESON HORNE: This is a very big subject, and I think we ought to have a stocktaking and a review of this subject of submucous resection. The question is whether this treatment should be continued at all.

Capt. SMURTHWAITE: During the last year I have examined many noses on which the submucous resection operation had been performed. In most of the cases too little cartilage had been removed. In the present case too much has been taken away. Most men, when doing the operation for the first time, do not remove sufficient, so the obstruction is as before the operation. I have not previously seen a falling-in of the nose following the resection operation.

Sir STCLAIR THOMSON (in reply): As to the cause of this falling-in, several explanations have been suggested. I consider that it is not a question of too much or too little removal, but that the danger in these cases is the formation of a septal abscess which has not been recognised promptly. In early days I was surprised to find what could be kept up by a narrow strip of cartilage. I have had some cases of hæmatoma which have suppurated, and I have been afraid of discovering an abscess of the septum. But by free drainage, in good time, I have never seen collapse occur in any case. It is what may have happened in this case. We should tell our patients, both private and hospital, to be sure to report, because in such an event we can open the abscess and stave off collapse. I am interested in hearing Mr. Harmer's remarks, because Mr. Walsham was one of the pioneers in paraffin injections, and it is highly interesting to know that the ultimate results are not always good. I will have a photograph of this boy taken, and show him again in a few months.

Result of Treatment by Diathermy of Extensive Epithelioma, affecting the Soft and Hard Palate, Tonsils, and Fauccial Pillars.—Norman Patterson.—The growth would have been quite inoperable by any other means. It was removed entire. A portion of the hard palate is evidently in a state of necrosis, and will ultimately separate. This shows that destruction of tissues has taken place well beyond the actual parts removed. The patient has indulged freely in tobacco and alcohol, and has been in the habit of drinking very hot tea.

Dr. W. HILL: Mr. Patterson dissected this out with the diathermy point. I was not surprised to learn the time the operation took, because it is a slow process.

Mr. FRANK ROSE: I noticed a somewhat large area of bare bone exposed. In doing diathermy in these cases of inoperable malignant disease, I have noticed that if the disease has already penetrated into the substance of the bone, the result is disappointing, even if one applies the heat so as to cause a fairly deep necrosis of bone. I wonder if Mr. Patterson has had similar experience.

Mr. NORMAN PATTERSON (in reply): The first case in which I removed a growth entire was one of malignant disease of the tongue and floor of the mouth. The growth, together with a good margin of healthy tissue, was cut out by using the diathermy needle instead of a knife. The removal was facilitated by the employment of scissors to cut through the tissues as soon as they were thoroughly "cooked." If the area does not contain any large vessels a blade with a fairly sharp edge may be used

(*e.g.* in dividing the tongue down the centre). After removal of the mass of tissue containing the growth I always go over the whole surface of the wound with a button-shaped instrument; this increases the chances of the growth being completely destroyed. With regard to cases in which bone is involved, I agree with what Mr. Rose has said, and I can recall grave disappointment in a case of malignant disease affecting the upper jaw. In the patient shown I am quite certain that the disease did not involve the bony palate, but was confined to the mucous membrane. Notwithstanding this fact, I am glad to see necrosis occurring, as it shows that destruction has taken place well beyond the diseased area.

Case for Diagnosis.—**George Badgerow.**—Male patient, aged about thirty-eight. Web extending from the soft palate to the pharyngeal wall; probably due to diphtheria in early life. It did not cause any inconvenience, and it was discovered by chance.

The PRESIDENT: I looked upon it as cicatrisation following ulceration. The patient was very ill with scarlet fever when he was aged four.

Abstracts.

PHARYNX.

Retro-pharyngeal Abscess.—**Calvin C. Rush.** "Journ. Amer. Med. Assoc.," July 20, 1918.

The body of an unknown two-year-old negro child was brought to the Jefferson Medical College, Philadelphia, for anatomical purposes. The body was not in a good enough state of preservation for dissection, so a sagittal section was made after fixation in formalin. A retro-pharyngeal abscess was disclosed, completely obstructing the pharynx and larynx. The abscess cavity was 3 cm. in length, and projected forwards 2 cm. The writer here gives the anatomical relations with reference to this condition.

Immediately behind the mucous membrane of the pharynx is the pharyngeal aponeurosis. Behind this are the pharyngeal constrictors, which in turn are covered by the thin buccopharyngeal fascia. Next is the strong layer of prevertebral fascia covering the prevertebral muscles.

The sources of infection causing retro-pharyngeal abscess may be as follows: (1) Caries of the cervical vertebræ, usually tuberculous. This burrows laterally as a rule, and appears behind the sterno-mastoid. If unopened it may follow the brachial plexus into the axilla. (2) Otitis media. The pus probably burrows downwards in the upper part of the Eustachian tube along the tensor tympani muscle to terminate behind the prevertebral fascia. (3) Extension inwards of a carotid abscess. (4) Infection of the lymph-nodes of the retro-pharyngeal space. These receive lymphatics from the nasopharynx, Eustachian tubes, nasal fossæ and accessory sinuses.

J. K. Milne Dickie.

Epidemic of Sore Throat at Fort Ethan Allen.—**Maj. Brewer.** "New York Med. Journ.," May, 1918.

An outbreak of sore throat took place in a troop of U.S.A. cavalry. Forty-four cases occurred within a few days. There was slight ulceration

of the soft palate or tonsils with formation of a greyish membrane. None of the cases were seriously ill and the condition cleared up very rapidly in two to three days. Bacteriological examination showed streptococci in certain cases and in others spirilla and fusiform bacilli. One other case of Vincent's angina had occurred in the troop three months before, but no very definite connection between this case, and the outbreak was discovered, as the first case did not sleep with the others but merely fed with them. No further spread of the epidemic occurred. Writer was of opinion that the first case had infected the cook, and the cook had infected the rest.

J. K. Milne Dickie.

The Control of Bleeding in Tonsillectomy.—**William Dwyer.** "Laryngoscope," September, 1917, p. 688.

Dwyer states that the amount of bleeding during the removal of tonsils decreases as the depth of anaesthesia (general) increases. With the Sluder method he has had more bleeding than with dissecting. The use of suction during the operation is a great advantage. The majority of bleeding points can be controlled by making pressure with gauze sponges. When pressure applied for a short time does not stop the bleeding, it is best to tie the bleeding vessel. Ligatures work well, but are hard to place, and may slip afterwards. A flat-jawed needle forceps, some full-curved needles and a Carmalt clamp are all that are required. Number 0 iodine catgut does very well for the suture material, and 18 in. is a convenient length. It saves time to have a needle threaded on each end of the suture material.

Method.—Retract the anterior pillar, and sponge in order to locate the exact point. Catch it with a Carmalt clamp, including just as small an amount of tissue as possible. Then take a stitch just above the clamp, but as near the points as possible, introducing the needle antero-posteriorly. If slight inward traction is made with the Carmalt clamp while introducing the needle the tissues will be tented, and it will be possible to include only a minimum amount. Now, taking the needle on the other end of the suture, make a similar stitch below the clamp, towards the tongue, again going antero-posteriorly. The clamp is now removed to give more room in tying. When it is tied you have a purse-string suture around the point in question, and bleeding from that point will be impossible. If care is taken not to include too much tissue there is no distortion. In a very few cases there will seem to be a general oozing. Then a gauze sponge inserted between the pillars and held in by a couple of sutures through the edges of the pillars will control it. The sponge should be left in for twenty-four hours.

Adenoid Bleeding.—After removing the adenoids, rubbing the nasopharynx with gauze wet with alcohol will remove any small tags. Then pack gauze into the nasopharynx with the finger, and leave in position for an hour or so.

J. S. Fraser.

Two Hundred Consecutive Tonsillectomies under Local Anæsthesia.—**Oscar Wilkinson.** "The Laryngoscope," September, 1917, p. 667.

After-care of the Patient.—Those who complain of pain are given an ice-pack around the neck, and some demand an injection of codeine or codeine by the mouth. In nervous subjects Wilkinson found that one or two doses of bromide of potash had a good effect. In the series of two hundred cases there were four of primary hæmorrhages (within seventy hours of operation), but it was necessary in only one case to ligate the

bleeding vessel. There were three cases of secondary hæmorrhage, and in only one case was it necessary to sew up the tonsil-cavity.

Another complication is neuralgia of the throat. Within a few weeks after operation the patients return with a stinging, burning, lancinating pain at the lower anterior portion of the tonsil scar. This is due to the involvement of a tonsillar branch of the glossopharyngeal nerve in the scar. Injury to the main portion of the glossopharyngeal nerve might occur in this region. The patient suffers for a long time, if not indefinitely, from a severe dryness of the throat and fatigue after singing or speaking.

J. S. Fraser.

The Teeth and Tonsils as Causative Factors in Arthritis.—R. Hammond (Providence). "Amer. Journ. Med. Sci.," October, 1918.

This paper contains a historical review of the subject, as well as an analysis of a series of forty cases observed by the writer himself. Referring to the diagnosis of dental abscess he states that the interpretation of dental skiagrams is full of pitfalls. It is possible to take a skiagram from such an angle that an apical abscess is apparently demonstrated, while another made from a slightly different angle will show normal bone around the tooth-apex, the reason being that at certain angles a portion of the nasal cavity or antrum may overlie the tooth-root and simulate the appearance of an abscess. Again, an apical shadow may represent atrophy or absorption from long-continued irritation or pressure; it may mean an acute infective process or may indicate merely the remains of former disease—scar-tissue. These shadows do not necessarily indicate the presence of pus. Thus, many innocent teeth are being sacrificed from insufficient data, such as crudely-interpreted skiagrams. Worse than this, several fatalities from ill-advised extraction of teeth during periods of exacerbation have been reported. It is well to remember the remarkable ability of the tooth and adjacent structures to bring about spontaneous cure of a blind dental abscess with no resulting systemic involvement.

The writer's forty cases of arthritis included twenty-nine in which the teeth and tonsils were proved to be diseased: in twelve of these the teeth alone were affected, in eleven the tonsils alone, and in six both teeth and tonsils. Immediate improvement, which could be classed as a cure, followed extraction of teeth in only one case and tonsillectomy in one case. Many cases regarded as "improved" showed the improvement rather in their general health than in a changed appearance of the joints. The improvement following treatment of dental disease was more noticeable than the improvement following operations on diseased tonsils.

The conclusion is that the relation of the teeth and tonsils to arthritis is still a moot question, and it is probable that the pendulum has swung too far in the direction of the wholesale removal of teeth and tonsils. One reason for the failure to obtain successful results in arthritis by the treatment of dental and tonsillar disease is that the cases have been selected without knowledge of the exact pathological condition present in the organ in question. The crypts of a tonsil may overcome an existing infection, and an apical dental abscess may become walled off and so undergo a natural cure. In neither of these cases will operation influence the joint condition. In acute arthritis the probability of producing a cure or improvement by removal of a supposed focus in teeth or tonsils is greater than in cases in the chronic stage. It is unreasonable to expect that a restoration of function can be brought about in

joints where extensive pathological changes have taken place. The writer has been impressed during the investigation by the marked improvement in the general health of the patients when diseased conditions of the teeth and tonsils have been properly treated. This is noted very commonly even when no damage is apparent in the joint condition.

Thomas Guthrie.

NOSE.

Nasal Septum Deformity in Children.—Louis G. Kaempfer. "The Laryngoscope," December, 1917, p. 868

Zuckerkanll has said that septal deviation does not occur before the seventh year, *i. e.* before the development of the jaw with the second dentition. The upper jaw in civilised man is much smaller than in his forebears. The Gothic type of palate, usual in infancy (?), persists more often nowadays, and there is not room for the larger teeth of the second dentition. The result is a crowding upward and buckling of the vomer and other parts of the septum. The jaw does not expand sufficiently for the palate to flatten out and leave room for the downward growth of the septum. In his examination of 314 children Kaempfer has noticed that many had slight thickening of one or other side of the septum, and holds that it is quite probable that later on these thickenings may develop into true deviations. Two groups of children were examined. The larger group (220) was seen in the Out-Patient Department of Mount Sinai Hospital. The youngest child was five weeks old and the oldest seven years. One hundred and eight children (about 50 per cent.) showed deformities of the septum: 65 had thickening, and 43 deviations. The proportion of deviations and thickenings of the septum increased as the children grew older. There were few in whom abnormal turbinates could be found; indeed, only 12 showed hypertrophy of the lower turbinate, and 10 a similar condition of the middle turbinate. In all but one of these children the enlargement of the turbinates was associated with thickening or deviation of the septum, and Kaempfer holds that the condition of the turbinates is the effect rather than the cause of the deviation. Almost all of the children examined had high, arched palates—in fact, only 11 per cent. had low palates. Of the 25 children with low palates 12 had thickened septa and one had a deviation. Out of 108 cases with septal deformity 101 had enlarged tonsils (93 per cent.). Among the children without septal deformity only 77 per cent. had hypertrophied tonsils.

The second group of cases were drawn from children living in a large institution. These cases numbered 94, and ranged in age from six months to five years. They lived under excellent surroundings, spent much time out of doors, slept in well-ventilated rooms, and were guarded against errors in diet. Of these 94 children, 38 showed abnormality of the nasal septum (24 thickening and 14 deviations). Only one child had large turbinates. Seventy-one of the children had enlarged tonsils.

J. S. Fraser.

EAR.

Changing Methods and Advances in the Treatment of Progressive Deafness from Chronic Secretory Otitis Media.—F. P. Emerson. "Annals of Otology," xxvi, p. 1007.

The author insists that every case of chronic progressive middle-ear deafness has a primary focus, which persists as a low-grade infection,

subject to acute exacerbations. In chronic cases such foci are usually multiple. Such a primary focus is usually constant for the individual, and is indicated by the location of exacerbations. Every case showing variable hearing can usually be improved up to their best hearing, or more. In the experience of the author so-called cases of nerve-deafness of non-specific origin are due to toxæmia from some definite focus. In chronic cases inflation as a routine treatment is unscientific and harmful, the tube being already open and having partially lost its tone in the majority of cases, whilst in the cases where the tube is not open it does nothing to remove the cause. Nasal obstructions do no harm to the middle ear unless infection is present. Such obstructions, however, are the primary cause in the development of imperfect drainage, which predisposes to infection, and which is always present in cases of chronic secretory otitis media originating in the nose. Foci, whether in the sinuses, tonsils, mandible, or epipharynx, are potential factors in the progress of chronic progressive otitis media, either by direct extension or through the lymph and blood-streams. No hearing test will forecast the improvement in a given case as long as we have a positive Rinne with variable hearing. Whatever the macroscopic appearance of the membrana tympani, the cause of the deafness is active for a long time outside the middle ear as a toxæmia or low-grade infection subject to acute exacerbations. Constitutional diseases have but little effect on the course of chronic secretory otitis media, except to lower the resistance of the patient and make him more susceptible to exacerbations of their localised focus or foci.

Marleod Yearsley.

Ablation of the Labyrinth in a Case with Menière's Symptoms.— Courtenay Yorke. "Brit. Med. Journ.," October 19, 1918, p. 429.

A man, aged fifty-one, who had led a quiet and temperate life, was suddenly seized with vertigo and sickness, which persisted for several days. He had a second attack six weeks later, and after that the attacks recurred every month or so, lasting for several minutes or several hours. There was a prodromal feeling of sea-sickness, and a minute later intense vertigo, nausea and vomiting. During the attack the patient was quite prostrated and the slightest movement aggravated the symptoms. After eight months he became suddenly deaf in the left ear, with loud tinnitus, and this deafness became almost complete, whilst the Menière attacks increased in frequency. The general health suffered, and he became depressed and neurasthenic and unfit for any work.

Four years after the commencement of the symptoms he had two attacks of unconsciousness, and at this stage he came under the writer's care. Both drums were normal. Rinne was negative on left and positive on right. Left ear almost quite deaf, right ear slightly deaf. Bone-conduction reduced on left markedly, on right slightly. Nose and throat healthy. No spontaneous nystagmus and no Romberg sign. Both labyrinths gave normal reactions (time not stated) to the caloric test, the left being the more sensitive.

A diagnosis was made of bilateral labyrinth disease, worse on the left side. All the evidence pointed to the fact that the left side was that which gave rise to the Menière attacks, and as the hearing on this side was lost and the symptoms were becoming worse and making the patient's life intolerable, operation was undertaken. The antrum was opened in the usual manner, but the tympanic cavity was left undisturbed. The posterior meatal wall was only partly removed, and as soon as the antrum

was opened a plug of gauge was placed in the aditus in order to wall off the tympanum. The external semicircular canal was opened by removing small scales of bone with a minute gouge. The opening was enlarged forwards towards the ampullæ of the superior and external canals and sufficient access obtained to allow the introduction of a fine wire with which the vestibule was fitted.

The author claims originality for this method of destroying the labyrinth—a method which combined the simplest technique with the smallest trauma.

The wound was drained for twenty-four hours. As was to be expected, the operation was followed by severe vertigo, nystagmus to the right and a tendency to fall to the left, but within two weeks the patient could walk about without support. The hearing on the left side was gone and tinnitus greatly reduced. Caloric test of the operated side produced no response. As time went on the sense of balance became restored and vertigo and nystagmus disappeared.

When seen eighteen months after the operation the patient stated that there had been no return of the old attacks, and that his balance so improved that he could cycle with ease.

Douglas Guthrie.

Contribution to the Study of the Reactions of Equilibrium.—J. Coulon.

"Rev. de Laryngol., d'Otol., et de Rhinol." April 15, 1918.

A monograph of original research of outstanding interest to otologists. The author begins with a *resumé* of certain physiological points, including a reminder that in any nystagmus the involuntary, unconscious, uncontrolled movement is the slow component, the quick component being a voluntary recovery. So that what we speak of clinically as a nystagmus to the left is in truth a nystagmus to the right, and *vice versa*.

He then proceeds to his research, which deals with the lateral bending of the body and deviated gait on attempting to walk, with closed eyes immediately after rotation. All such lateral movements he includes under the term "lateropulsion." And the kernel of the matter is that the direction of lateropulsion differs with the stimulus used, and accordingly corresponds to either the slow or quick component. Thus, to summarise:

(1) In caloric tests lateropulsion is in the same direction as the involuntary eye-movement, *i.e.* the slow component—*e.g.* towards the ear irrigated with cold water.

(2) In rotation tests the reverse holds: after being turned clockwise, there is lateropulsion to the left, *i.e.* in the direction of the voluntary quick component.

(3) If instead of rotating the body we stimulate by circumduction of the head above, body fixed, the involuntary slow movements of eyes and body are homolateral as in (1), and contrary to (2) above.

To explain this difference in lateropulsion when head-circumduction is substituted for body rotation, the author suggests that in the former the endolymph of the vertical rather than the horizontal canals is set in motion.

(4) In hyper- or hypo-excitability of the labyrinth, lateropulsion reactions are invariably increased or diminished *pari passu* with nystagmus: this is demonstrable on deaf-mutes.

(5) A patient suffering from "commotion deafness" will always show a lateropulsion in only one direction (which may be right or left), whichever way he be rotated. And this persistent unilateralisation of

lateral movement of the trunk is unaffected by hyper- or hypo-excitability of the labyrinth, as evidenced by nystagmus reactions.

This last finding the author says he has no suggestion to explain. The paper is a real addition to our patchy knowledge of a fascinating subject.

H. Lawson Whale.

MISCELLANEOUS.

Constitutional Hypersensitiveness and Brouchnal Asthma.—Arent de Besche. "Presse Med.," April, 1918.

In thirty-one cases of asthma, the asthmatic condition was in twelve cases found to have a definite relation to the presence of certain animals, viz., in eleven cases to horses and in one case to cats; in another case the asthma had a peculiar relation to the proteids of one of the ordinary sorts of grain, presumably wheat.

In cases where the asthmatic condition is brought about by the presence of horses, a conjunctival reflex may be elicited in the following way: The finger is placed on the skin of a horse and then applied to the conjunctiva of the patient. In all cases of "horse-asthma" conjunctival redness, abundant lacrymal secretion and slight cedema of the conjunctiva appear. Five of the cases also showed a cutaneous reaction. This is shown when a drop of horse-serum is applied to a vaccination scratch. In positive cases a bleb develops on the spot.

In a case of "horse-asthma" an injection of 2 c.c. antidiphtheritic horse-serum produced a state resembling anaphylactic shock. After recovery the patient was for four months entirely free from his asthma. During this period he was able to handle horses without any recurrence of the asthma. Later on the asthma reappeared.

Some cases of horse-asthma are also similarly affected by cows, dogs and other domestic animals, while others are only sensitive to the horse.

It is somewhat dangerous to inject horse-serum into a person subject to horse-asthma, but in other asthmatics and hay-fever patients horse-serum has no specific harmful action. One may be on the safe side by making use of the above-mentioned conjunctival and cutaneous reactions to see whether the patient is abnormally sensitive to the horse before giving the serum.

J. K. Milne Dickie.

Gummatous Syphilis of the Thyroid Gland.—F. E. Senear (University of Michigan). "Amer. Journ. Med. Sci.," May, 1918.

Tertiary syphilis of the thyroid gland is of rare occurrence, the total number of recorded cases being twenty-three, including one which forms the subject of this paper. In only eighteen of the cases was the sex stated, and of these eleven were women and seven men, there being therefore a definite preponderance of the female sex. The cases so closely resemble carcinoma that a differential diagnosis on clinical grounds alone is often impossible. As a rule a hard, nodular or smooth tumour is found involving either lobe, the isthmus, or the whole gland. Symptoms due to thyroid disturbance are unusual, and when they occur are those of myxœdema, or apparently in rare cases those of hyperthyroidism. Symptoms due to interference with respiration are very common, and may be so severe as to cause death. In at least nine of the cases there was involvement of the respiratory or food passages.

Tracheal stenosis occurred three times, œsophageal stenosis once, and tracheal ulceration once. Recurrent laryngeal paralysis was found twice. In two of the cases the disease began in the larynx, and extended to the thyroid gland, while in all the others the gland itself was first involved. Response to treatment is as prompt as is usual in syphilis of other parts, and if the nature of the condition is realised and treatment begun in good time the prognosis is very favourable.

Thomas Guthrie.

REVIEWS

Pathologie de Guerre du Larynx et de la Trachée. By E. J. MOURE, G. LIEBAULT and G. CANTYT. Pp. 370. Paris: Librairie Felix Alcan.

This monograph is a well-written and well-illustrated work, which not only deals with all the pathology, as its title would indicate, but also traverses with very considerable detail the anatomy, therapy, and surgery connected therewith. Indeed, it would not be out of place in the libraries of peace as a most readable and instructive treatise on certain injuries and diseases of the larynx and trachea. The epithet "de guerre" is a little misleading, though fashionable, as it is difficult to discover a disorder therein described which, strictly speaking, can be regarded as peculiar to warfare. After all, the human frame and temperament remain unchanged however much environment may vary, and traumatic atresia of the larynx presents the same problems whether the result of an attempted suicide or due to a fragment of shell.

The description is divisible into four parts, the first of which discusses "functional" troubles, the second extra-laryngeal lesions, the third injuries of the laryngo-tracheal passage itself, whilst the fourth is devoted to the surgical technique which these lesions demand.

The authors consider that as a rule the aphonic cases recover though they may require much time and elaborate treatment; that as regards stammerers, however, it is necessary to make such a statement with reserve, and they emphasise the fact that this latter condition is often an old disability revived.

Excellent anatomical plates are contained in the second part, which most conveniently illustrate the various cases quoted as typifying the injuries to nerves supplying the parts concerned and to contiguous structures, such as the base of the tongue, hypopharynx, and œsophagus.

Similarly the third part is well supported with most clear pictorial and descriptive accounts of the intrinsic injuries which have come into the hands of the writers, who urge that these traumatic atresias do not in any way resemble those following syphilitic and other like ulcerations (as, indeed, no one is likely to dispute), and further state that of twenty-four patients submitted to tracheo-laryngostomy eight are completely healed and the remaining sixteen well on their way to cure—a result on which the authors are most certainly to be congratulated, and which leads them to the statement that the vast majority of such injuries received during war, if submitted to this treatment, should recover respiration through the natural passages and be able even to speak sufficiently well.

In the fourth part thyrotomy, laryngotomy and tracheotomy are all carefully described, leading up to what is probably the portion of greatest interest, viz. the method and technique for the treatment of the different forms of stenosis which constitute the subject of this section. Essentially

the author's methods are the same as those described by Schmiegelow (an abstract of whose principles of practice appeared in the JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY for the month of January, 1913), with the exception of the manner in which the rubber tube laid in the repaired laryngo-tracheal tract is maintained in position. The authors' modification consists in "anchoring" this tube to a pad of dressings laid over the wound and subsequently closing the wound by a definite plastic operation—a procedure which would appear to be an improvement for many reasons.

The book can be thoroughly recommended, and the profession are indebted to the authors for a very carefully prepared addition to the literature on the subject.

Alex. R. Tweedie.

King Silence. A Story. By ARNOLD HILL PAYNE. London, N.D.: Jarrolds. Pp. ix + 295.

This is propaganda in the form of a story which, albeit there is a certain human interest running through it, is not distinguished by much literary merit.

The author is one of a steadily dwindling sect who would make the deaf a finger-spelling, signing class by themselves. This tends to inter-marriage, and is bad socially and especially bad eugenically. The pure oralists—who are, to Mr. Payne, anathema—seek, by careful and especially by *early* education in lip-reading, phonation, and articulation, to fit the deaf to take their place in the ranks of the hearing, and to hold their own among them in the battle of life. Only those who are "in" deaf education know the bitter warfare which has been waged in the debating hall and on the platform between these two antithetical schools. Classification of the deaf for educational purposes, with the adaptation of the methods best suited to the individual case, is slowly but surely gaining the day.

Mr. Payne calls the oral system the "German method," but it has been established beyond contradiction that the oral method was in use in England and Scotland in Dr. Johnson's time and is mentioned by Boswell. Braidwood, of Edinburgh, was its real inventor (although John Wallis, Savilian Professor of Geometry at Oxford, described it to Charles II in 1663). It was taken up by the Germans because of its excellence and somehow got to be known by their name, but it is no more German than Shakespeare, Rameses, or Julius Caesar.

Macneil Yeatsley.

OBITUARY.

MRS. EMIL BEHNKE.

Our readers will note with regret the death of Mrs. Emil Behnke, who carried on with remarkable energy and success the work inaugurated by her late husband, once a prominent figure in musical and laryngological circles in London. It will be remembered that he laid the greatest stress on the acquisition of correct inspiration in the cultivation of the voice, whether for singing or speaking. He was an ardent apostle of "diaphragmatic" breathing, which he taught with such enthusiasm and conviction that he obtained wonderful results in defects of the singing voice and particularly in stammering. Whatever differences of opinion may have existed as to some of the minor details of the "respiration"

problem, there is no doubt as to the excellence of the results. The writer has always contended that the success attained was due to some extent to the "personality" of the teacher; but, whatever the cause, there were the results. In his views he was vigorously supported by Mr. Lennox Browne.

Mrs. Behnke was endowed with exceptional powers of comprehension and exposition, and as to these was added a singular distinctness of utterance her capacity for carrying on the work was obvious. It is said that "a woman's work is never done," and Mrs. Behnke was an admirable administrator in domestic as well as business affairs. She was of English birth, being the eldest daughter of the late Charles Pope, Esq., of Weymouth. Her life was a full and often an anxious one, but her extraordinary activity up till the age of eighty-five shows what women, or, at least, some women, can do.

Her daughter, Miss Kate Behnke, has been a teacher almost from the cradle. The present writer remembers her as the subject of investigations into the changes in the vocal cords during the production of "head-notes" at a very early age. She is now a skilled expositor of her parents' teaching.

The late Mrs. Emil Behnke has contributed to literature works on "Stammering, Cleft-palate Speech and Lispering," and "The Speaking Voice." Her industry seemed unending, her energy inexhaustible, and these powers have been strained perhaps to the breaking-point during the war, when she laboured hard to enable candidates for military posts to overcome the vocal defects which stood in their way.

Many will mourn her loss as a friend and helper.

Dundas Grant.

O. VON CHIARI.

Professor of Rhino-Laryngology in the University of Vienna.

THIS well-known Professor of Rhino-Laryngology in the University of Vienna died suddenly of apoplexy on May 12, 1918, at the age of sixty-five, while on a shooting expedition.

Although his name, as well as his pleasant manners, suggested an Italian origin, Prof. Chiari came from Bohemia, being born in Prague in the year 1853. He qualified at Vienna in 1877, in 1879 he was associated with Schroetter, and in 1882 he qualified as a Privatdozent.

In 1899 he gained the title of Professor, and on the death of Schnitzler he succeeded to the charge of the Section of Rhino-Laryngology at the Poliklinik. Here he remained until he succeeded Stoerk as Professor in the Allgemeines Krankenhaus.

He organised the International Congress of Laryngology in Vienna, and in 1911 he inaugurated the new buildings of the University Throat and Nose Klinik.

Prof. Chiari was an extensive writer. He has been well-known to many generations of Anglo-American students in Vienna, and was a frequent and welcome visitor to this country.

In his klinik such well-known men as Kohler, Marschik, Koffler and Hanssel have been trained.

StC. T.

HANS KOSCHIER,

Vienna.

The death of this Privatdozent of Vienna was recorded last year. Koschier was aged fifty-two, and it came as a surprise to read that he

died of tubercle of the spine when we recollect his massive frame and commanding appearance. He was for some years assistant to Prof. Stoerk in the old Allgemeines Krankenhaus, and there I was indebted to him for much help in the year 1893. The acquaintanceship originated in a curious way: Koschier was a native of Dalmatia, and like all dwellers on that part of the Adriatic Coast, he was quite bi-lingual, speaking Italian as easily as German. As I felt more at home in the former language we adopted it for our common intercourse, and it interested other students to hear a German demonstrating to a Britisher in Italian!

When Stoerk died Chiari left the Wiener Poliklinik for the Chair of Laryngology, and it was generally thought that Hajek would succeed him, as he had long worked there. But other influences were at work, and Koschier was elected to the Throat Department in the Mariannengasse.

His name was connected with much literary work, his chief researches being connected with carcinoma of the larynx. Probably he had performed more laryngo-fissures than any other surgeon in Austria, as Chiari handed him his cases for operation. In this he was very successful.

StC. T.

PROFESSOR LUDWIG STACHE.

Professor of Otology in Erfurt, Germany.

Prof. Ludwig Stache died suddenly in Germany on January 13, 1918. He was a pupil of Schwartz, and his name is well known in connection with operations on the mastoid. It is claimed in Germany that Schwartz was the first to establish the operation of opening the mastoid antrum, and that Stache carried the operation a step further by continuing the operation into the middle ear, and so developed what we know as the complete post-aural operation.

StC. T.

NOTES AND QUERIES.

SURGICAL APHORISMS.—BY MR. D'ARCY POWER.

The cricoid cartilage is the guide both for laryngotomy and for high tracheotomy. Its position, therefore, must be verified before an incision is made for either operation.

In the operations of laryngotomy and tracheotomy the windpipe has not been opened in the living body unless air rushes out. Inexperienced operators assign many reasons to account for the absence of this outrush.

The first outrush of air is usually followed by a short period of apnoea. Put in the laryngotomy or tracheotomy tube, and then wait until the respirations become regular before proceeding farther.

Do not suture the incision after laryngotomy lest surgical emphysema follow. A dressing of dry gauze kept in place by strapping is sufficient.

Remember that the advance of science now permits of visual exploration of the trachea, bronchi, oesophagus, stomach, rectum and bladder. It is no longer necessary to guess about the condition of these parts nor to be content with skiagrams. Look and see what ails them.

There are three stages in the career of a surgeon: in the first he loses the fear of hæmorrhage; in the second he ceases to multiply operations; in the third he acquires the moral courage to stop in the middle of an operation when he finds the conditions inoperable. There is a final stage which he never attains with the present span of life—the ability to gauge correctly the vital resistance of the patient, yet upon this depends the success of every operation.—*St. Bartholomew's Hospital Journal*, January, 1919.

SWIFT AND HIS GIDDINESS.

There has recently been much correspondence regarding the nature of Swift's complaint, but no conclusions satisfactory to the expert were found. The facts recorded are these: For many years Swift suffered with attacks of sickness and vertigo, which he attributed to a surfeit of Shene pippins and a chill caught by sitting in a draughty summer-house. At a later date there was a moderate degree of deafness. His habits were far from abstemious: he freely admitted his fondness for Burgundy and good living. Later still, fits of melancholia and despondency necessitated special attendants, which some of his biographers interpreted as madness. Such could hardly have been the case, for during the period of restraint he wrote many clever epigrams in magazines. He died in 1745. In 1835 his remains, together with "Stella's," were disinterred from St. Patrick's Cathedral. His skull and larynx was hawked about the social circles of Dublin. Dr. Wilde (? Wilde's snare) observed that Swift's skull "affording evidence of 'diseased action' of the brain during life such as would be produced by an increasing tendency to cerebral congestion" (Thackeray). This is not very convincing nor satisfactory to a pathologist; but worse still is the suggestion made by one correspondent in the *Times* that his deafness and vertigo were due to neglected middle-ear suppuration!

Careful search through all available authorities fails to give the slightest support to such a suggestion. The onset and course of the trouble is clearly indicative of *Menière's symptoms*, but not middle-ear disease. He suffered with attacks of vertigo and sickness for many years before complaining of deafness. Of this there is abundant evidence in his own writings, and we must not be too ready to belittle his account of cause and effect. His habits were such as to justify the view that he suffered with auto-toxaemia, which was suddenly intensified by an over-indulgence in pippins. His eccentricities, his domestic relations, his uncontrollable outburst of rage, and the subsequent course of events all support such an interpretation. At all events there is not the slightest evidence that Swift suffered with suppuration of the middle ear.

The late years of his life were undoubtedly attended by great affliction, but not madness. He remarked—"I shall be like that tree: I shall die at the top." So great was his suffering that he dreaded, not death, but life. As Archbishop King said to Delaney, after seeing Swift, "You have just met the most unhappy man on earth." Such was indeed true, for Swift wrote to Bolingbroke—"It is time for me to have done with the world, and so I would if I could get into a better before I was called into the best, and not to die here in a rage like a poisoned rat in a hole."

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WYATT WINGRAVE.

CEPHALIC SNUFF.

In the *Times* of April, 1797, is the following advertisement:

"For complaints in the Head and Eyes the *Cordial Cephalic Snuff* has been found by long experience an effectual remedy for most disorders of the head.

"It is extremely proper for all persons who visit the sick or go into unhealthy places, as it fortifies the head against noxious exhalations and infectious air."

Can our *Insublation Menthol Co.* do all this?

WYATT WINGRAVE.

PERITONSILLAR ABSCESS.

"John died of a quinsy

And was buried at Binsey."

Such is the epitaph to the memory of John Doley in Northants. Its author is to be commended not only for its brevity, but also his anxiety to record the cause of the subject's death and the spot of his interment. It is a "plain, unsophisticated epitaph," and "develops the whole catastrophe."

T. P. Outram, *The Etonian*, vol. ii, p. 401, 1822.

WYATT WINGRAVE.

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A SERIES OF CONSECUTIVE CASES IN WHICH THE MASTOID HAS BEEN OPERATED ON FOR ACUTE SUPPURATIVE INFLAMMATION, B.I.P. (BISMUTH, IODOFORM AND LIQUID PARAFFIN) INSERTED, AND THE EXTERNAL WOUND SUTURED IN ITS ENTIRE LENGTH AT THE CLOSE OF THE OPERATION.¹

BY HERBERT TILLEY.

My object in bringing forward these cases is only to demonstrate that by the use of B.I.P. (bismuth subnitrate 220 grm., iodoform 440 grm., and liquid paraffin 220 grm.) we have a means of greatly shortening the after-treatment in many cases of acute suppurative inflammation of the mastoid antrum and cells.

For the introduction of this antiseptic compound we are indebted to Prof. Rutherford Morison, of Newcastle-on-Tyne. An instructive paper concerning its use in general surgery was published by him in the *British Medical Journal*, October 20, 1917. Having read his paper, I immediately secured some B.I.P. and used it in my acute and chronic cases, but in this communication I am only concerned with its application to the recent and acute forms of suppuration.

The details of the operation on the cases shown here to-day need no comment in that it has consisted as heretofore in removing the outer wall of the antrum and the cortical layer of the mastoid, then curetting away the infected mucous membrane of the antrum, followed by removal of all suppurating mastoid cells.

The "attic" and tympanic cavities are then irrigated with warm normal saline directed forwards through a cannula or fine-pointed syringe by way of the aditus.

The bony wound is now thoroughly cleansed with swabs moistened

¹ Read at the Otological Section of the Royal Society of Medicine, May 31, 1918.

in methylated spirit, dried, the parts smeared with B.I.P., the external wound sutured in its entire length, and a dry sterilised dressing firmly applied by a bandage.

The dressings and the stitches are removed on the fourth or fifth day and the line of incision painted with collodion.

In nearly every case I have found the wound securely healed without any inflammatory blush, and this even when the stitches had been inserted through thick, bacon-rind oedema.

A second and light gauze dressing is applied over the ear, and this is removed at the end of another four or five days and not replaced.

What has struck me most forcibly in my cases has been the entire absence of any inflammatory reaction in the soft parts after the operation. In three or four of the cases the line of incision was scarcely visible when the first dressing was removed.

In my first two or three cases I inserted too much of the B.I.P., and for two to three weeks afterwards granules of iodoform were visible in a thin serous discharge from the meatus. This was easily treated by the ordinary methods of cleansing. The condition does not arise if the parts are only well *smeared* with the preparation.

I have had no case of iodoform poisoning.

The great advantage of the method is the saving of time in the after-treatment. Hitherto one was contented if a case of acute mastoid suppuration was completely cured within a month to five weeks from the operation. By the use of the B.I.P. compound we are able to discharge the patient from the hospital within ten days to a fortnight.

Although it is not germane to the work of this Section, I should like to say that I have been equally successful in the use of the preparation in three consecutive cases of external operation for chronic suppuration of the frontal sinus.

It is in the hope that members of this Section may give this method a trial that I venture to bring before them the results of my own experience.

W. B—, aged eight. Admitted December 24, 1917; discharged January 8, 1918 = 15 days.

History.—Patient was admitted for severe earache and temperature 103° F. It was said that the duration of symptoms was only two days!

Examination.—Purulent discharge from meatus. Slight oedema over mastoid process. Tympanic membrane hidden by oedematous swelling of the deep, posterior meatal wall.

Operation (December 24).—The usual incision was made. On opening the antrum it was found to be filled with muco-pus. Mucous membrane very oedematous. Mastoid cells in neighbourhood of floor of antrum very inflamed, but no suppuration seen. Wound cleansed, smeared with B.I.P., and sutured in its whole length.

January 8: Wound completely healed and patient leaves hospital to-day. Duration in hospital, fifteen days.

C. J—, aged seven. Admitted January 27, 1918; discharged February 19.

History.—Admitted as emergency. History of two years' discharge from right ear; this ceased a week ago, since when there has been pain in and around the ear, feverishness, and one attack of vomiting.

Examination.—Temperature, 104° F.; pulse, 110; respirations, 30. No oedema over mastoid, but a tender, red swelling below upper end of right sterno-mastoid.

Operation (January 29).—Usual mastoid operation performed. Pus in antrum and mastoid cells. Wound completely sutured. Convalescence interrupted by broncho-pneumonia in right lung.

S. J—, aged twelve. Admitted March 9, 1918; discharged April 2, 1918.

History.—Severe pain in right ear three to four days before admission. Patient says right ear has discharged on and off for two to three years.

Examination.—Right pinna projects away from side of head. Marked oedema of tissues over mastoid. Meatus obstructed by swelling so that tympanic membrane is not visible. Temperature 100.4° F.

Operation.—Usual post-aural incision. Tissues about half an inch thick with bacon-rind oedema. Pus escaped when incision crossed external surface of mastoid. Fistula found leading into antrum. External wall of antrum and mastoid cells removed. Dura mater found to be exposed in roof of antrum and over lateral sinus. After thoroughly removing inflamed cells and mucous membrane, the bony wound was cleansed with spirit, dried, and smeared with B.I.P. The skin wound was sutured in its entire length and bandages applied. Three days later the dressings were removed. The oedema had quite disappeared, and except for its lowest half-inch the wound had healed and was free from inflammatory blush. Temperature normal.

March 23, 1918: External wound quite dry, *i.e.* less than a fortnight from operation.

May 7, 1918: Seen in Out-Patient Department. There is practically no discharge from meatus, but some granules of iodoform powder can still be syringed from the meatus. Stay in hospital, twenty-five days inclusive.

F T—, aged seventeen. Admitted March 21, 1918; discharged April 4, 1918.

History.—Severe pain in and discharge from right ear about a week.

Examination.—(Oedema over mastoid and tender swelling underneath upper end of right sterno-mastoid muscle.

Operation.—Usual incision. With the first tap of the hammer pus escaped by the end of the chisel. Mastoid process was practically a shell of bone filled with granulations and pus. The lateral sinus was exposed by the disease. Pus could be pressed upwards from the swelling under the sterno-mastoid into the region of the tip of the mastoid process; the latter was removed in its entirety. Wound cleansed as in first case and smeared thickly with B.I.P. Soft parts sutured in its entire length.

March 24, 1918: Wound dressed. Inflammation had subsided.

March 26, 1918: Stitches removed. No suppuration.

April 4, 1918. Patient discharged. He can hear my watch six inches from the ear. In hospital fifteen days inclusive.

F. R—, aged twelve. Admitted March 28, 1918; discharged April 14, 1918.

History.—Severe earache and discharge one week.

Examination.—Discharge right ear. Pain on deep pressure over mastoid. Bulging of deep posterior meatal wall.

Operation.—Usual incision. Small mastoid antrum filled with pus. Mastoid cells near floor of antrum infiltrated with muco-pus. B.I.P. inserted and wound sutured. Stay in hospital, fifteen days.

L. H—, aged eight. Admitted April 26, 1918.

History.—Earache for a week. No discharge.

Examination.—Painful swelling above ear in lower part of temporal fossa. No oedema or pain on deep pressure over mastoid. Drum membrane pale, lustreless, and indrawn. No sign of perforation.

Operation (April 27).—Usual incision and considerable oedema under its upper one-fourth. Pus and swollen granulation tissue in antrum. Cells near floor of antrum inflamed. Wound cleansed, dried, and B.I.P. inserted. Wound sutured.

May 5: All dressings removed. Wound securely healed. Stay in hospital, twelve days.

F. P—, aged six. Admitted May 14, 1918; discharged June 1, 1918.

Symptoms.—History of two to three weeks' earache and discharge. Local doctor had opened abscess over external surface of mastoid.

Operation (May 16, 1918).—Outer surface of mastoid bone "worm-eaten" and covered by granulations. Pns filling antrum and mastoid cells as far as tip of mastoid process. Lateral sinus exposed by disease. Stay in hospital, sixteen days.

Additional note (February 21, 1919).—At a meeting of the Otological Section held on the above date I showed the following patient:

Capt. L. P. H—, aged twenty-two, consulted me on February 13 on account of profuse discharge from left ear, which had lasted six weeks. He looked ill and worn out, which he attributed to the severe earache, which kept him awake at night.

Examination.—Profuse discharge from meatus, the latter narrowed by swelling of the deep posterior meatal wall so that the drum membrane is invisible. Pinna projects from side of head and there is extensive oedema over mastoid region. Temperature 99.4° F.

Operation (February 13, 5 p.m.)—The usual incision gave exit to a subperiosteal abscess. The soft tissues were about 1 in. thick from oedema. The removal of outer walls of antrum and mastoid cells revealed extensive destruction of the mastoid process, and the bony wall of the lateral sinus had been destroyed for about half an inch over the posterior wall of the abscess. While removing the tip of the mastoid process I accidentally wounded the sinus, and checked the flow of blood by means of a strip of gauze moistened with B.I.P.

Having removed all the infected region, cleansed with spirit and smeared with B.I.P., the entire wound was sutured except for its lowest end, through which the gauze strip plugging the sinus was led out.

The patient made a quick recovery; the gauze strip was removed on the second day, and the wound healed by immediate union. The patient was exhibited before the Section on the eighth day from operation and left the nursing home on the ninth day.

Experience has taught me (1) that the B.I.P. should be of the consistency of thin cream rather than that of a paste; (2) that the soft tissues and bone should only be smeared with the preparation; and (3) that when the sutures have been inserted, firm pressure should be applied in order to squeeze out from the wound any excess of blood and B.I.P. which may have accumulated during the insertion of the stitches.

I only desire to claim for the method that it materially shortens the after-treatment of those cases for which we perform the Schwartz operation. It is, of course, only the blood-clot method over again, but its security seems to be enhanced by the use of a suitable antiseptic, which, so far as my experience goes, has no irritating or toxic properties when used in the manner I have described. I am quite open to conviction that the preliminary swabbing with spirit may be a factor in the success of the method, because of the dry field of operation which is thereby afforded before the bismuth-iodoform compound is applied. In any case the combination of the spirit and the B.I.P. produces excellent results.

TWO CASES WITH CEREBELLAR SYMPTOMS.

By ANDREW CAMPBELL, Captain, I.M.S.,

Otologist, Karachi Brigade; late Senior Clinical Assistant, Ear and Throat Department, Royal Infirmary, Edinburgh.

SEPOY M. S.—, aged twenty. Field service fifteen months. Admitted to hospital in July, 1917, with much discharge from the right ear and considerable tenderness over the mastoid area. A Schwartz operation was done on July 9 and recovery was uneventful, except that for a day or two after the patient appeared to be rather excitable. The temperature went up to 101.8° F. on the eighth day after operation. The operation was an unsuitable one, and on August 24 a radical mastoid operation was done in the usual way, the dura of the middle fossa being exposed: the sinus was not seen. Six hours after operation a slight facial paresis developed, which afterwards entirely disappeared. On the day after operation the pulse and temperature were normal, the patient very irritable and occasionally violent. He was given chloral and bromide. The condition did not change till the 27th, when he became drowsy and was

continually dropping off to sleep, and waking up very soon after with a violent start. He jumped out of bed and had to be watched carefully. He became more and more violent during the following days and was very difficult to nurse. On September 4 he had an attack of epistaxis from the bleeding area of the septum, which appeared to have been damaged by the finger. In the afternoon he became drowsy, and he developed a convergent squint for a few seconds and later conjugate deviation of the eyes to the right side. During the night he suddenly lost all trace of drowsiness and violence. He stated that he remembered nothing since the operation till to-day, except that he had bad dreams. His expression was now quite intelligent. He progressed well till September 13, when he vomited four times accompanied by nausea. He was more depressed and complained of sleeplessness, but he walked about the ward and gained strength daily. There was nothing to be seen in the fundi, the pulse and temperature were normal, and yet he did not appear fit. The wound was healing well. Occasionally he would vomit, perhaps once in two or three days. I was absent from hospital at this stage, and during that time he had a bad attack of vomiting which lasted for two days, and on the second day he complained of pain in the head behind the ear. I saw him again on October 7, when there was nothing in the ear to account for any pain. Pulse, temperature, etc., were normal, and they did not vary much from it during the whole course of his long illness. There was tenderness behind the ear, but no œdema or redness. He was able to hear conversation on the operated side; no nystagmus. The hand-grasps were strong and equal, knee-jerks exaggerated, no plantar reflex, but there was slight inco-ordination when tested in bed. He was unable to stand or walk, fell mostly backwards, and his gait was reeling when supported. Cold-syringing, which was done under difficulties, produced no nystagmus, but he was very giddy and tended to fall towards the same side; he would not look at the finger. Dysdiadokokinesia; no pointing error; fundi normal. Beyond vomiting of a cerebral type and the cerebellar gait there was nothing to note. Vomiting was not constant, but occurred every few days. About this time the epistaxis recommenced and I suspected him of producing it artificially and frequently. It suggested a hysterical condition and I asked for a consultation, the result of which was the following report:

"I am of opinion that the general condition of this patient is very strongly suggestive, if not conclusive, of the presence of organic brain mischief. The symptoms point to a lesion situated in relation to the right lobe of the cerebellum, and when the history is taken into consideration it would seem almost certain that this lesion is an encysted collection of pus which has formed secondary to the otitis media.

"I base the above opinion on the following:

"(1) The history.

"(2) The presence of definite sensitiveness to percussion all over right posterior quadrant of the head; this extends beyond the bounds of the local tenderness over the mastoid area.

"(3) The continued presence of vomiting of a cerebral type.

"(4) The absence of optic neuritis does not negative the presence of tumour or abscess.

"(5) The gait of the patient. This conforms to the typical cerebellar ataxia. The patient sways about like a drunken man and there is a constant tendency to fall backwards.

"(6) The presence of subjective symptoms in giddiness and severe vertigo.

"(7) The presence of marked exaggeration of the knee-jerks. The plantar reflex is absent.

"(8) The presence of a slight though definite amount of inco-ordination when tested by the finger-nose, heel-knee tests.

"(9) The presence of a leucocytosis (not counted).

"I can make out no definite nervous localising symptoms involving either lateral lobe or the middle lobe. The signs present are general to all parts of the cerebellum, but the history and localised tenderness make it certain that any lesion involves the right lobe of the cerebellum."

Armed with this excellent report I suggested operation, but the patient refused to have any further interference. The blood was frequently examined, with no leucocytosis. He would not permit a lumbar puncture. Nothing was found in the faeces, etc. We had no option but to wait for "something to turn up": in the meantime he ate, slept well, and put on weight. He wheeled himself about on an invalid chair, but attempts to re-educate him to walk were not very successful. One day "something did turn up." I came into the ward unexpectedly and noticed him sitting in bed smoking a cigarette: the next minute while I was leaving he vomited a great deal of what appeared to be pure water, and on investigation it was proved that he drank water immediately after my arrival and got rid of it on my departure. This confirmed the diagnosis of hysteria to my mind.

The treatment adopted was suggestive. He was isolated, given dark glasses, and a few minutes of the Faradic current each day. Within a week the vomiting ceased and he was able to stand up unsupported, which he had not done for over two months. Soon he was able to walk and look his own level, but on approaching anything solid he lost confidence and threw himself at it. The mastoid cavity was now completely dry, and that helped to convince him that he was cured. He improved very rapidly after this, but still had a little epistaxis. The bleeding area was cauterised at one or two points, and this stopped any further nasal symptoms. He was observed for a month after he had completely recovered his power of walking, and finally sent on leave as he was anxious to rejoin his regiment and return overseas for service.

I have recorded the case as I think it interesting, not only because it simulated cerebellar abscess, but because we were able to watch a case of hysteria from the beginning to the end—an opportunity which does not often present itself.

Driver L—, aged twenty-five. Eight months' field service. Admitted to hospital on May 10, 1918, from overseas with the following history. About two months ago he had pain in the right ear for twenty-four hours, followed by discharge, which continued for about one month. Suddenly he felt weak, became giddy, and was unable to walk well or even stand. Severe headache and frequent vomiting were present. During the week on board ship there was no discharge, vomiting or headache, but all three recurred on the day of disembarkation, May 10.

On admission he complained of discharge from the right ear, of slight frontal headache, and of the previous vomiting. He walked slowly, there was no ataxia, and he appeared ill. Questions were answered slowly and had to be frequently repeated. The right eye diverged, an old corneal opacity was present, and he stated that he had

always had deficient vision in this eye. Visual acuity was fingers at one yard. The other eye was normal, V. $\frac{5}{5}$. No ocular paralysis, no nystagmus, no facial paralysis, knee-jerks normal, no plantar reflex: nothing to note in heart, lungs, kidneys.

Local Examination.—L.M.T.: Opaque, whisper at one foot. R.M.T.: Posterior central perforation with pus oozing out. Low voice heard one foot. No mastoid tenderness or oedema, and he stated that he had not had any swelling behind the ear nor any pain. Tuning-fork tests were unreliable. He was put under routine treatment.

On May 12 he vomited once and the membrane was bulging, so a paracentesis was done, with a good result.

On May 13, pulse 80, temperature 98° F., respirations 18. Patient still weak but able to walk about. On the next day he was weaker; he vomited six times during the night, reported as cerebral in type. Copious ear discharge was present. Pulse 60, temperature 97° F., respirations 24. Horizontal nystagmus present for the first time to the opposite side. Vestibular reaction not tested. Fundi showed a typical choked disc on the right side and a normal disc on the left. Heard an ordinary voice with Bárány in the left ear.

Under chloroform the usual incision was made for a radical mastoid operation and the antrum soon exposed. Considerable amount of pus under pressure escaped. The antrum extended posteriorly to the sinus, the wall of which was covered with granulations. More dura was exposed internally, but no pus was seen and the cerebellum was pulsating. The radical operation was completed. The condition of the patient was not good at this stage, and it was hoped that the extradural collection of pus might have been responsible for all the symptoms.

May 15: Vomited once with nausea, no headache; pulse 80, temperature 98° F., respirations 24.

May 16: Vomited once with nausea, no headache, no facial paralysis; pulse 72, temperature 97° F., respirations 28.

May 17: Pulse 68, temperature 95.6° F., respirations 18. Vomited twice during the night: slept well; complained of frontal headache and was drowsy. He heard C.V. with Bárány in the left ear. Nystagmus is now of the second degree to the opposite side and inconstant. There was light facial paralysis; the right eye did not close properly. The wound looked well.

Under chloroform the wound was opened up and a small horizontal incision made at right angles to it. More bone was removed from the posterior surface of the petrous towards the internal auditory meatus. An area of dura internal to the sinus was thus exposed roughly about two-thirds of an inch in diameter. A vertical incision was made through the dura and then carried about half an inch into the pulsating cerebellum; a sinus forceps was introduced with its point towards the occiput and its blades opened. A gush of pale green pus occurred and the patient immediately stopped breathing. Tongue traction brought him round sufficiently to continue. About six to eight drachms of pus escaped, at first fluid and later much thicker; no odour. A probe introduced and touching the inner wall of the abscess cavity measured 2 in. from the dura. A small tube was inserted for $1\frac{1}{2}$ in., wound packed with iodoform gauze and left open. The operation lasted thirty-five minutes.

May 18: Pulse 72, temperature 95.6° F., respirations 18. He had

been restless, but there is no vomiting or headache. Superficial dressings changed. No nystagmus, no facial paralysis. Taking milk well. On the following day the temperature rose to normal; there was some serous discharge from the abscess cavity. The temperature from immediately before operation to a period of forty-eight hours after was between 95° and 96° F.; lowest taken was 95° F.

May 20: Passed a good night; drainage effective, escape of some glairy material during the dressing. Temperature, etc., normal, and the rest of the wound reacting well. From now on the progress was uneventful. On the 27th the tube was shortened, as the tube had been partly pushed out. Tube removed entirely on the 30th—a fortnight after the operation. On June 11 healthy granulations covered the mastoid cavity. The skin was undercut and stitched up under novocain. He was allowed up for half an hour on a chair on June 15.

June 29: Cavity looking well, and the patient was able to walk well, and appeared quite fit. At the beginning of August the right disc showed slight blurring at the edges, the left fundus was normal, and vision $\frac{5}{6}$. The sight in the right eye had not improved. On September 19 the mastoid cavity was completely covered with epithelium. He heard a low voice at about two feet, and he was able to stand upright with his eyes shut with only a slight amount of swaying, more marked to the left side. He was given four months' leave.

On the 23rd, on the eve of leaving the hospital, he developed influenza, and was the first case to have it in the hospital. On the 26th signs of broncho-pneumonia were observed in the right lung. The *Bacillus influenzae* was isolated by culture from the bloody sputum. He did well till the 30th, when it was obvious that the left lung was also involved, and he died on October 3. The epidemic which followed was of a very virulent type.

I was able to get permission (not an easy matter) to remove the cerebellum and temporal bone. The disease had remained purely local. No adhesions were found in the posterior fossa except at the site of the operation, an area a little larger than a sixpence. A small *cul de sac* of dura $\frac{1}{8}$ in. in diameter represented the site of the drainage-tube. The right hemisphere was flattened from above downwards, and also from before backwards, with the result that it was slightly smaller than the left. On horizontal section there was a scar about 1 in. long and $\frac{1}{2}$ in. broad occupying the outer part of the white matter of the right hemisphere. The grey matter had completely escaped, except where the drainage-tube had been inserted. The fibrous tissue composing the scar was harder than the substance of the cerebellum. The abscess had completely healed, and to the naked eye the damaged area appeared surprisingly small, considering that nearly one ounce of pus was evacuated at the operation and the abscess cavity was so large.

The points which interested me most in this case were the absence of any signs of chronic mastoiditis, the low temperature (95° F. lowest) for forty-eight hours, and the unilateral optic neuritis, while the left eye in appearance and vision was normal. One does not often have the opportunity of obtaining a specimen of a cured cerebellar abscess.

TUBERCULOMATA OF THE NOSE: REPORT OF TWO CASES.

BY JAMES HARPER, M.A., M.B., F.R.F.P.S.G.,

Surgeon-in-Charge, the Throat, Nose and Ear Department, Royal Hospital for Sick Children, Glasgow; Aural Surgeon to Out-Patients, Royal Infirmary, Glasgow.

THE occurrence of primary tuberculosis of the nose is so rare that I venture to hope the description of two cases which have been under my care may be of interest. These cases had much in common. Both were married men over middle age, and had reared large, healthy families, and neither in themselves nor in their family histories was there any evidence of tuberculosis.

The lesions were identical in both cases. In appearance they were the same, and occupied the same site in the nose, while the symptoms from which they suffered were similar. I had already treated the first case for nasal trouble which was non-tubercular, but the second case had never had any previous nasal trouble.

CASE 1.—I was first consulted by Mr. H——, aged forty-six, about eight years ago. For about five years he had suffered from nasal polypi, which had been removed on several occasions by various surgeons. When I saw him both nostrils were blocked by polypi. I removed the polypi, along with portions of the necrotic ethmoids and parts of the inferior turbinate bone on each side. The operation had the desired effect. In about six weeks the nose was free of discharge, and there was no sign of any recurrence of the polypi. I lost sight of the case until the autumn of 1913, when he again consulted me on account of nasal obstruction. He also complained of a profuse watery discharge with sneezing in the morning. The condition had gradually become worse during the previous four months. I suspected a return of the polypi, but on examination of the nose I found the ethmoid region free of polypi. There was, however, a growth springing from each side of the septum, which completely blocked the air-passages. It originated from the septum at the junction of the cartilaginous septum with the maxillary ridge of the superior maxilla. The growth commenced just inside the nostril, and extended back for about an inch and a half. It was pedunculated and did not invade the surrounding mucous membrane. It was reddish-grey in colour, and of an uneven, mammilated appearance. The growth felt firm and resistant, with no tendency to bleeding when probed, nor was there any evidence of ulceration. In appearance and consistency it was similar to that found in cases of hypertrophy of the inferior turbinate bones, where the mucous membrane covering the lower edge of the bone has become greatly thickened and lobulated and hangs down towards the floor of the nose.

The patient chiefly complained of obstruction to the breathing. As regards his general condition he informed me that he had never felt better in his life, and he looked the picture of robust health.

I suggested the removal of a small portion of the growth for microscopic examination, but the patient desired immediate relief from the nasal obstruction. Under cocaine anaesthesia I cut off the growth at the base with a sharp knife, keeping well down on to the cartilage and bone in each nostril. I prescribed a soothing nasal ointment, intending to await the result of the examination of the specimen. The report of the growth showed that microscopically it presented a typical tubercular appearance. The epithelium covering it, though thin in one or two places, was intact. There were scattered masses of cells throughout the growth, with epithelioid and giant cells in the centre of the masses, but no tubercle bacilli were to be found.

I was greatly surprised to find that the nose healed rapidly and gave no further trouble. I watched the case carefully, expecting an early recurrence of the condition, but the site from which the growth sprang was soon covered by healthy tissue. I have seen the patient at intervals since. His health has never been better, and on examination of the nose I can find no evidence of any further mischief.

CASE 2.—In the autumn of 1914 I was asked to see Mr. S——, aged forty-seven, by Dr. Neill. This patient had been complaining of nasal obstruction with a slight

watery discharge for some six months. Examination of the nose revealed a growth in each nostril in exactly the same situation as in the previous case. It was the same size, and had the same appearance and consistency. There was this difference, however: the growth on the right side was very slightly ulcerated at its anterior end, and the mucous membrane on each side of the septum appeared to be infiltrated for about a quarter of an inch above the growth. The appearance of this portion of the mucous membrane was similar to that seen in early lupus of the nose before it has begun to ulcerate.

I removed a small portion of the growth from the right nostril, including the ulcerated area. Microscopically the growth was of the same character as in the first case, but Dr Shaw Dunn reported that there were in addition numerous tubercle bacilli present in the tissue round the ulcerated area.

A few days later I removed the growth, taking with it the infiltrated mucous membrane. This I did by cutting out a portion of the septum and chiselling out the bone beneath the attachment of the growth. I insufflated some iodoform powder on to the surface of the exposed bone, and with this exception treated the case with my after-treatment for intra-nasal operations. The nose healed without any trouble, and a month later the area which had been operated upon was completely covered by healthy tissue. The discharge had stopped and no disease was apparent in the nostrils.

I have seen this case at intervals since, and the nose remains clean and healthy.

There are several unusual features common to both these cases. The growths were present in both nostrils. They healed rapidly without recurrence, and there was no tendency to bleeding. Most text-books tell us that nasal tuberculomata recur after operation, and that healing is always slow.

It is now five and a half years since I removed the growth in the first case, and four and a half years in the second case. The first patient is enjoying perfect health, and there is no sign of recurrence. The second case is of interest in that while the nasal condition remains healed the patient is at present in a sanatorium suffering from slight pulmonary tuberculosis.

THREE CASES OF ACCESSORY NASAL SINUS SUPPURATION.

By W. M. MOLLISON.

(1) *Loss of Memory from the Presence of a Single Nasal Polyp.*—The patient was a man, aged sixty, active mentally and physically. In April, 1916, he began to suffer from very severe frontal headache; the headache had wakened him regularly at 2 a.m. For three weeks he had been unable to attend to business on account of the pain.

For a few days he had complete loss of memory for intervals of a few hours. For example, his partner would come to discuss business; later, and after the interview, he would be astonished to hear that his partner had been, and could remember nothing about it.

A large nasopharyngeal polypus was seen and subsequently removed. Three days later the headache was much relieved, but the patient had complete loss of memory for four hours. The patient recovered completely and was able to resume business within a month.

Such a case might be of considerable medico-legal importance.

(2) *Acute Sphenoidal Sinus Suppuration Simulating Acute Mastoiditis.*—A lady, aged twenty-five, suffered from some nasal catarrh in February, 1918. A few days later she developed right-sided earache; she had a rigor, and the temperature rose to 105° F. During the following week

there was slight otorrhœa, and the temperature fell gradually to normal; she had, too, profuse epistaxis: there was slight tenderness over the right mastoid and some pain in the left ear. During the following (second) week the temperature was intermittent, rising to 103° and 104° F. daily, and at the end of this week the patient had rigors on three succeeding days. Towards the end of the second week she suffered daily from loss of memory for a few hours: she would in the evening remember nothing of her husband's visit in the afternoon.

The mastoid tenderness in conjunction with slight otorrhœa and rigors was suggestive of lateral sinus infection. The presence of mucopurulent nasal discharge suggested sinus infection, and exploration with Watson-Williams' needle and syringe revealed 2 c.c. of creamy pus in the right sphenoidal sinus. The sinus was opened freely: it was washed out daily, and the patient made a slow recovery. The ear suppuration ceased.

(3) *Severe Supra-orbital Neuralgia Dependent on Latent Frontal Sinus Suppuration.*—In 1913 a doctor, aged thirty, had an attack of cellulitis about the right shoulder: was operated upon and made a good recovery. During the attack, however, he began to suffer from pain over the left eye; the pain was continual, but varied in intensity; exposure to cold intensified it.

After some months alcohol was injected into the supra-orbital nerve but this only gave relief for two days. In 1914 a piece of the supra-orbital nerve was excised, without relief. In 1914-15 the pain was very severe, and on the advice of a neurologist injections of salvarsan were given, also inunctions of mercury, though the Wassermann reaction was negative. No relief was afforded. During 1915 and 1916 the pain continued, and, indeed, became worse; the eye was often covered, as the slightest draught brought on an acute paroxysm. In February, 1917, an attack of influenza increased the pain and life became a burden. In May the supra-orbital nerve was again explored and the central end found bulbous; excision only relieved the pain for a short time. Examination of the nose showed no sign of pus on two occasions, but X-ray examination showed the left frontal sinus slightly more opaque than the right. An intranasal operation was performed, but the fronto-nasal duct could not be entered on account of a bony projection in its anterior wall. Operation made the pain worse. In August, 1917, alcohol was injected into the Gasserian ganglion, but unfortunately the only result was that the pain spread to the second and third divisions of the fifth nerve. The patient became desperate. The question of removal of the Gasserian ganglion was discussed: before this was arranged a rhinologist of wide experience examined the patient and was convinced there was no disease of the frontal sinus. Nevertheless, on the X-ray finding the frontal sinus was explored through an external incision: it contained pus. Drainage into the nose was established.

In three months' time the pain had completely disappeared, and the patient was an active member of the R.A.M.C.

SOCIETIES' PROCEEDINGS.

ROYAL SOCIETY OF MEDICINE—OTOLOGICAL SECTION.

February 15, 1918.

H. J. BANKS-DAVIS, M.B., *President of the Section, in the Chair.*

DISCUSSION ON "THE INFLUENCE OF DISEASES AND ABNORMALITIES OF THE NOSE AND EAR."

INTRODUCTORY ADDRESS.—By WILLIAM HILL.

Aurists writing in the earlier decades of the last century never mentioned diseases of the nose in their papers and text-books on aural medicine and surgery. It was not until nearly the middle of the century that nasal lesions were occasionally alluded to in a half-hearted way by otologists as having some aetiological relationship to diseases of the ear accompanied by deafness. Anterior rhinoscopy was neither practised nor alluded to; and though posterior rhinoscopy was often mentioned it could rarely have been practised, or, at all events, could rarely have been expertly employed, else the condition known as adenoids could scarcely have eluded observation until when well on in the sixth decade. It is true that some years earlier Toynbee had discovered and described the cavernous structure of the inferior turbinal bodies, but, like his contemporaries, his excursions into the domain of nasal therapeutics were limited to the employment of rhinal douches, which were prescribed more with the idea of removing catarrhal secretions from the mouths of the Eustachian tube than from any deliberate intention of treating catarrh in the nasal cavities proper.

Of course the "man in the street" recognised then, as he does to-day, that an ordinary acute cold in the nose, and likewise the acute nasal catarrhs associated with the exanthematous fevers and other conditions, were frequently associated with deafness. The otologists of that day, however, as to-day, knew that this was not really a case of cause and effect, as the incidence of acute catarrh falls on both the ear and the rhino-pharyngeal tract without any necessary sequence, and it was only towards the middle of last century that it began to be suggested that the case of chronic catarrh was not on all fours with the acute catarrhs. Hinton mentioned in 1854 that Lucæ, of Berlin, had suggested that obstructive rhinitis affected the ear by rarefaction in the post-nasal space. The recognition of the influence of "adenoids" led many American and European rhinologists, as opposed to the pure otologists, from the seventies onwards, to make wide claims for the influence of nasal disease on the ear, not merely on account of the spread of non-purulent, muco-purulent, and purulent catarrhal processes to the tympanum, but also for the effect of nasal obstruction *per se* by the production of negative pressure.

Woakes not only subscribed to these views but added an additional

factor, viz. the *reflex* influence of nasal lesions on the ear—the associated nerve-area theory as he termed it—acting through the fifth nerve. He made special claims for an alleged form of osteitis of the nasal labyrinth, which he termed “necrosing ethmoiditis.” These particular views did not prove acceptable at the time, nor have they since been widely accepted by either otologists or rhinologists.

Woakes' further observation that chronic rhinitis led to a sluggish, parietic condition of the palate with accompanying tumefaction and deafness has, however, been regarded by many as one of great importance and in accordance with experience.

This important and controversial subject was very exhaustively and hotly discussed at the commencement of this century—viz. at the meeting of the British Medical Association at Ipswich in 1900 and at Manchester in 1902, and in the correspondence columns of the *British Medical Journal*, following an article by Sir Felix Semon. These discussions nominally centred round nasal *treatment* for middle-ear deafness, but of course the aetiological factor was necessarily bound up with the question and was fully dealt with. The net result was to bring out the fact that two divergent schools of thought even then existed, viz. the *separatist* school, who asserted that nasal disease was not a factor of very much importance in ear disease, and the *connectional* school, who were convinced that the association was often present, and was almost a self-evident proposition. This latter school again was divided into two groups. One group believed that a certain minor degree of nasal obstruction *per se*, which fell short of mouth-breathing, was a cause of Eustachian congestion and obstructive tumefaction as the result of *negative pressure*, although this group recognised also the factor of *nasal catarrhal diseases* as producing Eustachian stenosis and certain middle ear changes resulting in deafness. The other group rejected the negative pressure hypothesis, but accepted the catarrhal theory.

The small separatist school held that the nose and the ear were entitled to their separate diseases, and that in fact they were practically entirely independent one of the other. They argued that ear lesions were certainly and admittedly not the cause of nasal disease, and that the converse was equally true. By parallel reasoning it could be pointed out that ear disease is not asserted to be a cause of post-nasal disease, and the separatists were the first to admit that they could not and did not claim that the converse was true as regards the post-nasal space, and some of them recognised that their generalisation on logical grounds had to be met when their opponents called their attention to this analogous set of conditions. Analogy is, of course, not a strong argument in logic. Some of the separatists, however, felt that they had to meet this argument to the admitted influence of contiguous disease in the post-nasal space, and McBride, for instance, was forced to suggest that enlargement of Luschka's tonsil (which is admittedly frequently associated with middle-ear deafness, though sometimes not) only affected the ear when the lymphoid overgrowth actually touched the Eustachian cushions! Mere post-nasal obstruction no more caused Eustachian tumefaction than did nasal obstruction, and the negative pressure theory was rejected with contumely. They were in some difficulty, of course, when McKeown recalled attention to the fact that the deafness was often *immediately* relieved after removing adenoids.

Turning now to the *catarrhalist* group of the connectionists, its most

prominent advocates were Lake and Watson-Williams, supported by Law, Hovell, Pritchard, Kerr Love, Bromner, Kelson, Milligan, Tilley, and others. This group, while fully recognising that many cases of long-standing nasal catarrh, with or without more or less obstruction, did not become deaf, yet on the other hand urged that in a by no means negligible proportion of cases the two conditions were associated, and the frequency was sufficiently great to lead to the conclusion that it was a case of cause and effect. They laid stress on the view that the catarrhal process, with more or less accompanying tumefaction, *spread by continuity* from the nose to the tubes, that, though this sequence was not by any means always observed, yet we must regard any individual case of chronic nasal catarrh as a potential, or at least possible, ear case in the future and take measures accordingly. That in established cases of nasal disease, accompanied by deafness from tubal obstruction, surgical or other measures could justifiably be undertaken on nasal grounds alone, but that if the deafness was relieved by some method of inflation, or by bougieing, then it might be rightly urged that treatment might be expected, not merely to improve the ear condition, but also to arrest the further progress which would be likely in the absence of nasal treatment.

The *pure catarrhalists* rejected the ingenious hypothesis of the negative pressure school or *rarefactionists*. The latter were in general agreement with the catarrhalists as to the influence of various forms of chronic rhinitis in the ear, more especially when there was increased secretion, but, in addition, they held the view that nasal obstruction *per se*, so long as it *fell short of actually leading to mouth-breathing*, gave rise to negative pressure or rarefaction of the air in the nasopharynx and middle ear, resulting in "exhaustion otitis," and that congestion was followed by tumefaction in the tubes and middle ear with consequent deafness. Scanes Spicer, Dundas Grant and Baber were prominent advocates of these views.

Lack, with a view to giving "a more definite turn to the discussion," asserted that "nasal obstruction *per se* was never a cause of deafness or of ear disease."

His summarised reasons (here quoted nearly verbatim) were:

(1) The large number of cases met with in which "partial or complete nasal obstruction existed, and had existed for years with normal hearing and normal ears."

(a) In anterior nasal stenosis, partial or complete, due to syphilis or to lupus, "it was the greatest rarity to observe any impairment of hearing." (Tilley had pointed out that in bony occlusion of the posterior nares deafness was conspicuous by its absence in all reported cases.)

(b) In treating, on a very extensive scale, atrophic rhinitis with gauze packing, entirely obstructing respiration, it "had never produced deafness: on the contrary, occasionally pre-existing deafness had actually improved"!

(c) In nasal polypi, even in children, deafness was notoriously rare. "The same held true of nasal obstruction due to deflected septa and spurs." (Lack did not appeal to sinusitis, but it was pointed out by others that when acute otitis followed it was of the nature of an accident due to injudicious hyper-pressure douching and syringing.)

(2) "Growths in the post-nasal space—*e.g.* adenoids—caused deafness, but here there was no obstruction or negative pressure at the orifices of the Eustachian tubes, the plane of the site of obstruction produced by adenoids being posterior to the orifices of the tubes."

(3) In Eustachian obstruction deafness, he asked, "Why did negative pressure in the post-nasal space exert its influence on the tympanum and membrane when the tube was obstructed and not when it was patent, and how was it that the greater the amount of obstruction of the tube the more marked the indrawing of the drumhead?" "Surely Eustachian catarrh and obstruction, with or without more or less middle-ear catarrh, was the cause of the ear trouble in these cases, and not negative pressure."

(4) "Children with simple nasal stenosis were usually not deaf." (This was in contradiction to Horne and others, who, as I think very rightly, asserted that nasal obstruction, apart from post-nasal obstruction, though a sufficiently prominent factor in adults, was a much more prominent factor in children on account of the *relative* smallness of the nasal cavity in them, and Horne also suggestively called attention to the fact that the Eustachian trumpet was on a lower plane in children, and also nearer the floor of the nose, of which it was almost a direct continuation in line. It must be remembered, too, that the tube is relatively wider and shorter in children than in adults.) "Children with adenoids and also adults were often not deaf, but only when the tubes were blocked."

(5) The immediate improvement following adenoid operations might be "better explained by the lessening of the Eustachian obstruction resulting from hæmorrhage than by the negative pressure theory."

It will be seen that Lack and Tilley failed to appreciate the proviso insisted on by the supporters of the negative pressure hypothesis—that rarefaction in the post-nasal space only obtained when the degree of obstruction acting *per se* was a moderate one, and fell short of that which necessitated mouth-breathing. The majority of otologists, however, were at one with Lack in rejecting the alleged negative pressure influence in any circumstances.

It should be clearly stated and understood that those who took part in the discussions above mentioned were almost without exception of opinion that *a certain amount of clearly unnecessary nasal operating for deafness was being perpetrated at that time.* A few even thought it was very prevalent, though this was the opinion for the most part of certain specialists only who were not represented at these discussions. It was alleged that some enthusiasts went so far as to remove small septal spurs and cauterise the mucosa, with the promise of relief in long-standing middle-ear deafness, and even in cases of otosclerosis with open tubes.

Of those who took part in these controversies in this country nearly twenty years ago, all survive except Baber.

The subject has now come up for review and stocktaking by almost the same seniors again, who will now have the advantage of hearing the opinions of those of our junior *confrères*, many of whom were not practising otologists at the period of controversy early in this century, and the questions are: Does the modern view more or less correspond with those held by the more moderate members of the catarrhalist group? Or. Is expert opinion to-day widely divided? Are there any separatists? And, again, Are there any new aspects of this question?

I think I may conclude that the influence of nasal obstruction *per se* in the absence of accompanying catarrh has few adherents at the present day, and that even the very moderate and plausible claims made by Scanes Spicer and Dundas Grant for the negative pressure factor in

moderate degrees of nasal obstruction which fall short of mouth-breathing have not caught on.

Although we all of us admit in varying degrees the influence of nasal tumefactive catarrhal factors on the tubes and tympanum, yet the considerable number of cases of various forms of nasal catarrh in which the ears are not distinctly affected require explanation. Is an individual predisposition to catarrh, more especially to aural catarrh, a necessary additional factor in the production of deafness? How else can we explain the number of cases with nasal polypi, a typical catarrhal disease, with varying degrees of obstruction, in which the deafness is so slight as not to be acknowledged by the patient and only demonstrated by careful testing? Is it not a fact that nasal suppurative sinusitis is rarely followed by tympanic suppuration apart from those exceptional cases following operation or the injudicious use of the nasal douche? Why does the so-called dry catarrhal process, with crust and fœtor, so seldom cause deafness?

Again, the ætiology and pathology of the atonic palate of Woakes, following nasal catarrh, require further elucidation, as does the mechanism by which this condition leads to deafness.

May there not be just something in the associated area theory of Woakes? How are we to explain the occasional rapid relief of tinnitus and vertigo in various ear lesions by nasal cauterisation except by this reflex theory? It is alleged that otosclerosis is influenced for the worse by nasal operations and cauterisations. Is not this on the assumption that the ear is *reflexly* influenced for the bad under these circumstances?

In reference to enlargement of Luschka's tonsil: does this affect the tube and tympanum by the spread of tumefactive catarrh or by narrowing of the post-nasal space? What is the explanation of the *immediate* relief of deafness in many cases after the removal of adenoids? Again, is it not a fact that the mere removal of adenoids in children often relieves the accompanying nasal catarrh without any *ad hoc* treatment of the nasal cavities proper?

I hope that we may arrive at some definite conclusions as to when relief of ear symptoms in cases with accompanying nasal lesions can be expected, and when it is not nearly justifiable to operate on the nose, but unjustifiable neglect to omit to do so.

MR. NORMAN PATTERSON: For clinical purposes it may be useful to regard the middle ear as an accessory sinus or annexe of the nasal and post-nasal spaces, which may be looked at as one tract. The tympanum may be considered as corresponding to the frontal sinus and the Eustachian tube to the fronto-nasal canal. It is reasonable to suppose that infection is carried to the cavities in question along their respective ducts in exactly the same way. A pad of adenoids, or a neoplasm in the nasopharynx, may at times play the same part as an enlarged middle turbinate, a polypus, or other swelling in the neighbourhood of the middle meatus. The analogy is further brought out in considering the treatment of inflammatory diseases of the ear on the one hand and sinusitis on the other.

THE PRESIDENT read the following letter from Mr. LAMBERT LACK: "I am very sorry I cannot be present, as my views seem to have been considered of so much importance. On re-reading they seem to be more reasonable than one would expect after such a long period of years, but I entirely disagree with Dr. Hill's interpretation. My opinion is opposed

only to a theory of nasal obstruction acting by negative pressure. That nasal catarrh produces deafness I have never doubted, and obviously nasal obstruction produces nasal catarrh or predisposes to it. In olden days we fought a foolish theory of negative pressure which wrought much harm, but perhaps now is dead and forgotten."

Sir STCLAIR THOMSON: I approach the subject from the nasal side. We should check our observations by noting the conditions of more healthy subjects, as I have done for the last eight years. At Midhurst patients are only submitted to me to see whether there is anything wrong with the larynx, but I have used the occasion to look also at the nose, nasopharynx, and, where necessary, at the ears. In that way I see many patients who make no complaint of nose or throat: and yet I have been struck by the large number of them who have nasal obstruction without aural disease. So I have come to consider that this "negative pressure" theory is, as Dr. Hill put it, quite a "dead donkey." I am inclined to think the trouble is more pyogenic than obstructive, but there, again we are met with difficulties in these cases of ozæna and sinus suppuration, in which ear disease is not by any means the rule. When I was looking up the matter for my text-book, I investigated the records of all the published cases of patients with congenital atresia of the posterior choana, and it was remarkable that in them deafness or ear trouble was not noted. I operated upon a boy with an enormous nasopharyngeal fibroma—and other similar cases have been recorded—who was a constant mouth-breather because of the blockage, and yet deafness was not marked. Dr. Hill says it is accepted that catarrhal processes in the nose tend to extend to the ear, but I question whether it is as much accepted as that catarrhal affections of the nose extend to the pharynx, or affections of the pharynx to the larynx. We have to bear in mind local resistance and predisposition. I am sometimes asked to give an opinion—either a primary or a secondary one—as to whether a septum should be resected on account of symptoms, and I have seen a number of patients who have been told they have a deviated septum, and that, if it is not operated upon, they will go deaf. That is quite unjustifiable. But if the patient is already deaf, or has had ear attacks, I think it is right to tell the patient that to improve the air-passages—if they are open to improvement—is a wise precaution, to preserve the hearing they still have.

The point on which I differ from Dr. Hill is, that a catarrhal process in the nose has not, necessarily, a tendency to extend to the ear. The physiological view is, that the catarrhal process tends to attack both, not of necessity by a process of extension, but that the patient has either a congenital tendency, or a congenital loss of resistance in these two organs: in other words, he is a catarrhal subject. We know how difficult it is to explain the fact that in some families adenoids will cause one train of symptoms, and in another family another set of symptoms, just as other abnormalities seem to run in families. We ought to take account of the lowered resistance of certain organs in certain people, or a greater predisposition to certain diseases.

Dr. ALBERT GRAY: The phrase "negative pressure" is not justifiable; one might as well speak of dry rain. Negative pressure is an indication of something which does not exist. The right term in this connection is "diminished pressure." With regard to individual differences in people who suffer from nasal catarrh, I agree with what Sir StClair Thomson said, and that is the point I try to emphasise. Many individuals suffer from nasal obstruction, and yet only a limited number of these suffer from

dulness of hearing. That is one of the reasons why the results of operation on the nose for the relief of deafness are so often unsuccessful. I believe otosclerosis to belong to the degenerative conditions, not to the inflammatory. If there is a nasal condition which may show a tendency to produce deafness, it is not uncommon for the deafness to progress even when the nasal condition has been rectified. Many supposed cases of catarrhal deafness are those in which otosclerosis has also commenced, and that is why we may speak, correctly I think, of mixed cases.

MR. CHARLES HEATH: I regard aural catarrh as a constitutional affection, more than as a condition brought about by irritation or obstruction in the nose. Catarrh may and does affect the ear *and* the nose, or the ear or the nose. I have seen patients with no nasal catarrh who yet had undoubted catarrhal deafness. I have seen many cases of operation on the nasal septum which were not beneficial. Yet they seem to be more popular than do those on the turbinal bones. After both anterior and posterior turbinectomy has been done, I have seen the middle portion, which was left, still obstructing. This middle portion seems by many to be regarded as sacred: it must not be touched. A deaf servant in my house, who was a mouth-breather, had also double otorrhœa. I asked Dr. Jakins to remove her inferior turbinates. He said she would probably have a dry pharynx if he did. I replied that it would be dry in consequence of the nose transmitting air when the secretions of the nasal mucosa were diminished. Both her suppurating ears dried up, and the perforation healed as a result of the operation. I have seen other and similar cases. Yet I join Sir StClair Thomson in condemning the custom of promising improvement of hearing by nasal operations.

DR. WATSON-WILLIAMS: Dr. Hill has referred to the attitude I took up in the discussion eighteen years ago, and has characterised me a catarrhalist. My subsequent experience has made me even more so. I reject *in toto* the negative pressure hypothesis, in favour of which I have not heard a sound argument. I believe the influence of septal deflections and adenoids mainly depends on the catarrhal affection which may be associated. The reason of the variation in the results of operation on the septum in cases of deafness depends on the fact that often the nasal obstruction has led to a superadded infection of the nasal passages and sinuses—*e. g.* after an attack of influenza. In such a case the determining cause of deafness may be the septal deflection, if the deafness is due to the spread of that catarrh to the ear. I wish to draw attention to the group of cases in which pain is referred to the ear in sphenoidal sinus disease. Many years ago I was asked to see a patient, a boy, aged twelve, who was suffering from severe pain in the ear. I found nothing wrong in the ear, but slight febrile conditions, etc., led me to think he had influenza. I was then more chary of entering the sphenoidal sinus of a boy of that age than I should be now, so I left directions that if he did not improve with palliative measures I should be asked to see him again to explore the sinuses. So severe was the pain referred to the ear that Mr. Cheate was called in, with the view of doing a mastoid operation, but found nothing wrong in the ear. A little later Sir Victor Horsley was called down, when the patient was moribund, and it was thought to be cerebro-spinal meningitis, but the cause was not diagnosed. The *post-mortem* examination revealed cavernous sinus thrombosis, which the practitioner, Dr. Hubert Wilcox, thought was due to the sphenoidal sinus infection.

With regard to the general relationship of nasal catarrh to diseases of the ear, excluding nerve affections and those due to meatal conditions, such as new growths, syphilis and tubercle, I conclude that in most cases the aural affections are catarrhal—*i. e.* infective—and that in a great proportion of them the original source of the infection is the nose and naso-pharynx, either from rhinitis or nasal sinus infection, or it may be from infected adenoids. How far otosclerosis is due to toxic absorption from an infected ear is too much of an open question for discussion to-night. But I want to emphasise the frequency of a *latent* sinus infection, sometimes non-purulent, especially of the sphenoidal sinus, as the real source of otitis media. A young man, aged twenty-three, was brought to me by a practitioner who had been treating him for subacute mastoiditis of some weeks' duration. But he had supra-orbital neuralgia also, and he was found to have frontal sinus suppuration, and suppuration of the maxillary antrum. After I had operated upon the maxillary antrum and the frontal sinus the whole condition cleared up, and he went out to the Front with a sound ear. Since then I have been more consistent with my exploration of sinuses in cases requiring mastoid operation, and now I do not do that operation without first exploring the sinuses, by means of the suction syringe, which occupies one minute. It is astonishing with what relative frequency one finds the sinuses affected. Recently I had satisfied myself, in a patient upon whom a mastoid operation was to be done, that there was no sinus infection, but, on exploring, I found in one maxillary antrum a considerable amount of muco-pus. I made a pernasal opening and drained, to avoid having my operation spoiled by infection passing up the Eustachian tube to the middle ear. The presence of sinus infections is allowed to rest too much on the actual presence of pus, but a catarrhal secretion, if examined histologically, will often give a valuable clue when there are polynuclears and pyogenic organisms with polynuclears, showing there is active infection in that sinus, though I do not say such a sinus must require operation. If there is otitis media in association with infective sinusitis, they are probably interdependent conditions. Almost all cases of chronic otitis are infective, not necessarily purulent. It may be a dry otitis media and yet be infective. The result of my more recent observations is that the sinuses are infected in a larger proportion of cases than we have been led to suppose. My experience is that the more pus there is in the sinus, the less is the likelihood of the infection spreading to the ears. I have seen robust-looking patients with the nose full of polypi and pus, and the copious polynuclear exudation has apparently kept the development of organisms in check. If I am correct, this is the explanation why, in cases of well-marked signs of suppuration with polypoid degeneration, one comparatively rarely finds otitis media. In other cases, though the patient is depressed and pale, there is little to be seen. I therefore lay stress on the importance and relative frequency of the non-suppurative yet infective cases of sinusitis, for I fear they are often overlooked.

MR. CLAUD WOAKES: It is interesting to hear my father's work referred to by Dr. Hill. I myself follow his methods daily, and with some success. In treating deafness we must choose our cases, and be careful not to promise a cure of the deafness. The word "cure" is not in my medical vocabulary. I tell patients I shall probably give them relief if I remove what is causing the trouble. When I see an Eustachian tube which is not functioning, whether due to obstruction in the nose, or pressure, or ethmoiditis, I treat those conditions, and then open the

Eustachian tube by the ordinary method, with a bougie, and the results I have had have been fairly satisfactory.

Prof. URBAN PRITCHARD: I gathered it was said that the pressure of adenoids, by blocking the Eustachian tube, did not produce deafness. Still, we know that on the removal of adenoids the improvement in the hearing is often immediate. Some say it may be due to the hæmorrhage, but I do not believe that at all. I remember one case in which the patient had suppuration of both ears, and could only hear at $\frac{1}{2}$ in. a 50-in. watch, and immediately after coming out of the anæsthetic after the removal the hearing was normal. Why that was so I never could tell. In patients with bad suppuration I do not at once remove adenoids, but prefer to purify the middle ears as well as I can. When the suppuration is practically at an end, I remove them. The removal of adenoids in the presence of suppuration has produced mastoiditis.

With regard to the previous discussion, and the operations on the nose, we thought they were done much too frequently. I think we all practically objected to removing spurs in cases of otosclerosis. I am very glad Dr. Gray has improved our nomenclature. At Boston I said I wished somebody would invent a good name for otosclerosis, because all that was correct about the term in use was the "oto."

Mr. MARK HOVELL: When there is double nasal obstruction in a case of deafness, it is especially necessary to attend to the nose, and in some cases removal of a spur is beneficial, but much depends on the size of the spur, for it is not necessary to take away the whole of every spur. There should be a free air-way through the nose, but many people breathe comfortably through what appears to be an obstructed nostril, as air will pass readily through a tortuous passage, and the sensation of the patient can probably be trusted in this matter.

With regard to the question of adenoids, on which Dr. Hill touched, I have long held very decided views with respect to their recurrence. I used frequently to get recurrence, and one day the friends of a boy upon whom I had operated about two months before brought him back, saying he was no better and that his mouth was as widely open as before, and, therefore, the operation had not done any good. I knew all the adenoids had carefully been removed, so I anæsthetised the soft palate, and on examining the nasopharynx saw it was quite clear, but that both choanæ were blocked by the enlarged extremity of each inferior turbinated body. After the removal of these with a snare nasal respiration was fully restored, and ever since I have passed a snare as a routine measure to ensure the extremities, if enlarged, being taken away, and since have had no recurrence of adenoid growth. This procedure, I maintain, cannot do any harm, even if there is nothing to come away. It used to be taught that if the adenoids were removed nasal obstruction would disappear, but the case I have quoted clearly shows this to be an erroneous idea.

Dr. DUNDAS GRANT: I do not think it is desirable to divide the members of the specialty up into camps.* With one or two exceptions, I think that if the members of the various groups were together in consultation in any given case their opinions would exactly coincide. Dr. Law once told me he was sure the Vienna otologists would have been more successful with their cases if they had been better rhinologists. In one of our former discussions much confusion existed with regard to the diagnosis even of otosclerosis, and reproaches were uttered because one or two people were removing spurs with the intention of curing that disease. They had evidently not been able to diagnose otosclerosis, but would do

so to-day. They were probably confused also as to what constituted nasal obstruction. I pointed out in one of our great discussions that even though a nose may appear thoroughly obstructed, we have to ascertain whether there is *actual* obstruction before we operate. It may be said that if there is septal deflection to one side, and a narrowing of that cavity, there is a larger space than normal on the opposite side, and that one large cavity is good enough. But even though there is a large cavity on one side, if the other is obstructed the patient has got the use of only one nostril. It is not a stretching of mechanical mathematics to say that the degree of suction or negative pressure is in proportion to the obstruction, and when only one nostril is useful the space for entrance of air is diminished. It will be generally accepted that an obstruction on one side keeps up a catarrhal condition, but a wide nasal cavity is not a safeguard against catarrh, and the infection may extend along the Eustachian tube. "Negative pressure" is a term we understand, whether it is scientific or not, but it must be taken in its proper perspective. When there is partial obstruction in the nose and the patient is trying to inspire through it, there is a lowering of pressure behind the obstruction. I do not doubt this has in itself some effect in producing vascular tumescence, especially if there is in-suction of the *alve nasi*. The inspiratory dilatation of the thoracic cavity tends, however, to draw the blood into the thoracic organs and diminishes the peripheral vascularity. At the previous discussion an argument urged against Dr. Scanes Spicer's theory was that both nostrils may be full of polypi and yet there may be no signs of tympanic catarrh. His answer was, that in the absence of attempts at nasal breathing there was no negative pressure in the nasopharynx. We have all seen cases in which removal of obstruction has been followed by recovery from Eustachian catarrh: whether it was cause and effect it is difficult to say. No one would now entertain the idea of removing a small spur in otosclerosis and promising good hearing as a result.

Dr. P. G. GOLDSMITH: Before one operates upon the nose in a case of deafness, he should have a very careful record made of the degree of hearing. So many people have done operations on the nose and depended on what the patient said afterwards in forming a judgment on the benefit derived. The patient would feel better and brighter as a result of more air going into his head, as nasal obstruction often produces the feeling of dullness and stupidity. The hearing power should also be taken afterwards, irrespective of what the patient's own impressions are. Such a precaution would prevent the occurrence of that kind of case in which young women have had the turbinals and septums operated upon, and the operation for adenoids performed, with the subsequent discovery by another practitioner of commencing otosclerosis, together with a family history of the same complaint. Such procedures tend to bring discredit on the specialty. The question as to why some cases are very much benefited from adenoid operation, while others are not, I do not attempt to explain, but it is noteworthy that while some are relieved temporarily, others do not benefit at all, yet each case is of the catarrhal type. It is possible that one set of cases may have general lymphoid hyperplasia, and so it is conceivable that a tubal hyperplasia is the predominating feature in the cartilaginous portion. In the one set the progress will be fairly rapid, while in the other there will be little or no progress.

Another point is, that in examining cases to see whether the nose should be operated upon, it is the common belief that operating on the nose will improve the hearing. Not always. I think the important point

is the permanency of the improvement. I have a record of the hearing taken, then I inflate the ear and re-examine it in about twenty minutes. If the improvement is not maintained, I do not have an operation done on the nose with any idea of affecting the ear: any operation done on the nose is for the nose only.

Accurate case-taking will avoid many disappointing results. Careful records of the hearing tests both for diagnostic and comparative records is essential to sound practice. Furthermore, careful records of the progress in improvement is of first importance, since it is of great value in our determining when to stop treatment. Over-treatment is unfair to the patient, disappointing to the surgeon and patient alike, and for the latter may be di-astrous.

DR. JOHNSON HORNE: When discussing the benefit conferred by nasal treatment on deafness, otosclerosis is one cause of deafness which must be excluded. I do not know of a single case of pure otosclerosis which has benefited by nasal treatment apart from other treatment.

MR. W. STUART-LOW: I agree with another speaker that it is a pity to divide those who practise this specialty into sets or camps. Were I to receive a label I think it would be "Sepsisist," because I believe that in most of these cases there is a degree of sepsis present, and that we do not take cultures of the discharges frequently enough. Why do so many instances of marked deafness in the course of nasal catarrh recover their hearing completely? It is because in such cases the catarrh is due to the presence of such simple organisms as the *Micrococcus catarrhalis* as distinguished from septic organisms. But if you find septic organisms in the nose, the patient is liable to have fugitive sepsis of the middle ear, and the repetition of this produces exudative or dry catarrh of the middle ear, and a more permanent form of deafness results. One important precaution, therefore, is the careful bacteriological examination of the discharge from the nose. We have been told that in complete obstruction of the nose there is often no deafness. Why? Because there is no sepsis, but, if sepsis results, the patient will get fugitive attacks of middle-ear sepsis resulting in dry catarrh of the ear. We should operate for this condition if there are repeated attacks, because it will lead to deafness. The cause of repeated attacks—namely, anatomical abnormalities in the nose—should be removed by operation, all forms of nasal obstruction being removed.

DR. KELSON: Formerly, as senior clinical assistant at hospital for several years, I had the opportunity of watching cases after operation, and chronic cases as well, and so of judging the results of treatment better than when only seeing new cases. It is most important to know under what conditions, if any, operation on the nose is likely to be followed by relief of deafness, tinnitus or giddiness. My experience shows that there is a fair chance of some relief when, with nasal obstruction, (1) there is a marked tendency to colds in the head with increase of aural symptoms during the cold; (2) there is improvement on inflation; (3) there is improvement after sniffing alkaline lotion up the nose—this is often very striking, but whether by removing mucus or germs, or reflexly, is not so clear.

I shall not refer to adenoids, as they are, strictly speaking, outside the range of this discussion.

Twenty years ago many more minor operations were performed on the nose, especially on either end of the inferior turbinate, but subsequent improvement in hearing was very rare.

MR. HERBERT TILLEY: I can only say that in the opinion I expressed at the British Medical Association meeting at Ipswich in 1900 I am more confirmed to-day—namely, that obstruction of the nose *per se* has no influence in the production of those forms of deafness which are characterised as of middle-ear origin, except in so far as it acts indirectly in maintaining, or in promoting, catarrhal conditions. These are probably of microbic nature, and I believe them to be the cause of the infections of the middle ear which lead to the chronic forms of deafness in which we are interested to-day. I regard the treatment of otosclerosis by the removal of spurs as an illegitimate proceeding. You have only to remember the histological demonstrations of the lesions in otosclerosis which Mr. Fraser, Dr. Gray and others have shown us from time to time to bring such an idea of treatment into ridicule. With regard to the term “negative pressure,” I was glad to hear Dr. Gray express himself in disfavour of such ridiculous terminology. Curtis, of America, said we might just as well speak of vomiting as “negative swallowing!”

With respect to the reflex action of nasal disease on the ear, I think I was the first to emphasise this in the discussion on sinus suppuration at the British Medical Association meeting at Leicester in 1904, when I brought forward a case showing the influence of sphenoidal sinus suppuration in the production of severe earache. The operating table was in the patient's house ready for the performance of a mastoid operation the following morning, but at 10 o'clock overnight the lady felt so well that she said it could not be her ear which was at fault, and refused surgical treatment. A few days later she consulted me, and I discovered sphenoidal sinus suppuration. We opened the sinus, and she has never had any more ear trouble. There was no symptom in the ear except intense earache, and while this was in progress the pinna was hot and flushed, in marked contrast with that of the other side. Because of that pain it was thought there must be some deep-seated trouble in the ear, for it is well known that in certain rare cases of mastoid suppuration the tympanum may be intact.

With regard to the question as to what should guide us in determining whether a nasal operation will benefit a case of deafness, my own practice is as follows: If I find a patient's deafness varies from time to time and nasal obstruction is present, and if I find that Politzer's inflation or the Eustachian catheter improves the hearing even for a period of twenty minutes, I have not the slightest hesitation in dealing with any nasal disease or structural abnormality. But if I find that inflation of the tympanum has no effect on the chronic deafness, I do not think there is any call for dealing with the nose as a curative measure *quâ* the ear. To operate for the nasal comfort of the patient is another matter. I think that is the one test on which we can safely base our practice.

There are many points raised in Dr. Watson-Williams's observations, and the views he has advanced seem plausible, but I feel that if our practice is to be based on his conclusions we may be led into many difficulties. If I understand him aright, he maintains that one cannot be sure that any sinus is healthy unless the bacteriologist proves its contents to be non-infective. My own instinct would be to rely on my clinical judgment, this being based on the symptoms and the result of my examination rather than on the report of the pathologist.

DR. DONELAN: As Dr. Hill says, the term “idiopathic” is applied to diseases of which we do not know the cause and it should not be adopted by modern otologists. I have always understood that negative pressure

could exist only in the tympanum, and then only from interruption of the normal equilibrium by closure of the Eustachian tube and absorption of the air in the tympanum.

Mr. Stuart-Low rightly says that none of the obstructions mentioned has a permanently injurious effect on the hearing until there is retention of secretion in the nose or its accessory sinuses and septic or other changes occur in the secretion. As to the causation of otosclerosis, the analogy with the occurrence of chronic rheumatic arthritis in sequence to chronic nasopharyngeal inflammations will doubtless suggest itself to many.

The removal of spurs is not likely to have any effect on chronic otosclerosis, but spurs are often removed while gross obstructions at the chondro-vomer junction, for instance, are neglected. Where there is marked septal deformity, its correction is to be preferred to the removal of functionally active turbinates. Each case must, however, be treated according to its individual features.

Sir STCLAIR THOMSON: This association of ear pain with sphenoidal sinus disease does occur, and I have carried its proof through to the bitter end in a case in which I did a *post-mortem* examination. It is published in my paper, "Cerebral and Ophthalmic Complications in Sphenoidal Sinusitis."¹ The complaint was simply of pain in the ear, and the patient was sent to me at an ear hospital, but nothing aural was found wrong. He died of suppuration of the sphenoidal sinus with meningitis. At the *post-mortem* examination the ear was found intact.

The PRESIDENT: The thanks of the Section are due to Dr. Hill for the way he opened the discussion. All the speakers seem to be agreed that catarrhal conditions resulting from nasal obstruction do cause or contribute to the possibility of aural affections, and that in these cases the treatment is obvious. We see such cases every day, and we know that this is true; but whether middle-ear deafness can be relieved or its progress arrested by nasal treatment for real or apparent obstruction when catarrh is non-existent has not been decided at this meeting. Some cases seem to improve—others do not. The question can only be settled by quoting or publishing accurate statistics of cases extending over a period of years, and in order that a definite decision be arrived at by our Section this should be done.

Abstracts.

PHARYNX.

Tonsillectomy in the Tuberculous.—Frank L. Dennis. "The Laryngoscope," November, 1917, p. 805.

Dennis has operated on thirty-four cases, but has only observed the patients after operation in twenty-two instances. Of the latter the results are distinctly good in seventeen, poor in three, and of no effect in one. Five of the patients had laryngeal tuberculosis, one tuberculosis of

¹ *Trans. Med. Soc. Lond.*, 1906, xxix, pp. 12-71.

the pharynx, and one middle-ear tuberculosis. Ether was the anæsthetic in five cases, local anæsthesia being used in the others. Two of the five "ether" cases did badly afterwards. Dennis holds that a time should be chosen for operation when the general condition is favourable and the lungs are relatively quiescent. The post-operative care of the wound is important. Tincture of iodine should be applied once or twice daily until cicatrization is complete. The indications for operation are practically the same as for non-tubercular cases.

J. S. Fraser.

Operative Technique in Circumcision of the Tonsil.—Frank G. Murphy.
"The Laryngoscope," September, 1917, p. 672.

Murphy holds that in normal tonsils the plica triangularis—the "foreskin" of the tonsil—has practically disappeared before birth, and that the mucous glands of the faucial region rarely become infected when the plica has shrunk to normal. Where there is a persistent plica neither the tonsillar crypts nor the peritonsillar space drain normally. Murphy gives three excellent diagrams showing the technique of his operation for removal of the plica triangularis. He says that, in the normal tonsil and in those where the circumcision operation has been properly carried out, the tonsil should be easily forced between the pillars by the superior constrictor muscle when the patient retches or gags and also during deglutition. When there is a persistent plica the anterior and superior fossæ become culture-beds for pathogenic bacteria which infect the mucous glands. Further, the anterior pillars "ride the tonsil" in deglutition, preventing drainage of the crypts. (The diagrams in this paper should be studied.—*Abs.*)

J. S. Fraser.

EAR.

Carcinoma of the External Ear, with the Report of a Case.—F. Warner.
"Annals of Otology," xxvi, p. 950.

The case is one of a male, aged seventy-seven, and the report is interesting for the conclusions, which are as follows: (1) Cancer of the external ear is of infrequent occurrence. (2) Three-fourths of the cases occur in the pinna. (3) Cancer generally attacks the posterior surface, less frequently the anterior, occasionally some part of the rim, and in one case the lobe of the ear. (4) Epitheliomata of the external ear occur in males in 78½ per cent. of the cases. (5) The condition occurs only in advanced life or in those well into the middle period, when nutritional disturbances of a degenerative character are usually present. (6) Irritative influences are responsible for its initiation—eczema, spectacle bows and sailor's skin. (7) The epidermoid type prevails over that of the hair-matrix or rodent ulcer forms. (8) Insufficient removal (due to fear of a mutilating operation) is responsible for many of the recurrences. (9) After removal, the surface of the wound should be gone over with the actual cautery. (10) If the surface is broadly infiltrated, the operation should be followed up with the use of radium. (11) Glandular involvement is unusual and a late complication when it occurs. Out of twenty-seven cases it occurred four times (Mayo), and in none which had not been in existence four years. (12) In cases of supposed eczema of the external ear occurring in advanced life, one should be thoroughly alert

for cancer; if found, operate early enough to be a real service to the patient.

Macleod Yearsley.

Acute Mastoiditis as a Complication of Infectious Diseases.—Geo. H. Lathrope. "Journ. Amer. Med. Assoc.," August 10, 1918.

During the past winter the camps in the Southern States were invaded by a wide-spread streptococcal infection, involving mainly the lung and pleura, and having a high mortality. The organism in most instances was the *Streptococcus hemolyticus*. In Camp Shelby, however, the *S. viridans* was in the majority of instances the causal organism. In this camp, moreover, severe pulmonary infections were not so common as in other camps. One of the characteristic features of the epidemic in this camp was an outbreak of acute mastoiditis. In all 123 soldiers developed acute mastoiditis of one or both sides. Invariably there was a preceding middle-ear involvement, though in several cases the invasion of the middle ear and mastoid had the appearance of being synchronous, so rapidly did the infection mature. Frequently at the operation, within forty-eight or seventy-two hours from the appearance of the first symptoms, an extensive mastoiditis with necrosis of bone and formation of thick pus were found.

As regards the aetiology of the epidemic, an antecedent epidemic of measles played a very important part, being responsible for 36 per cent. of the cases. In some cases the mastoiditis followed almost immediately, while other patients had a continued cough or cold till the mastoiditis developed.

Of the 123 acute mastoids, cultures were taken at the operation from the pus in the mastoid cells in 81 cases. Of these 81 cases the streptococcus was present in 73 per cent., *Staphylococcus aureus* in 16 per cent., and miscellaneous organisms in 11 per cent. Thirty-four of the 59 streptococci were in pure culture. Five of these were *S. hemolyticus* and 29 *S. viridans*.

The cultural characteristics of *S. viridans* are somewhat similar to those of *S. mucosus*.

There were 12 deaths, all from streptococcal meningitis, proved bacteriologically. Of these 12, 8 had had measles recently. From this the conclusion was made that "when measles is abroad streptococcal infections are to be expected, and conversely, that all complications of measles are likely to be more severe than similar complications of other infections."

J. K. Milne Dickie.

Migration of a Round-Worm into the Ear.—H. Coussien. "Revue de Laryngologie, etc." (Noted in the "Lancet," 1919, vol. i, p 28.)

Girl, aged four. Pain right ear for eight hours. Pain was paroxysmal and did not succumb to remedies. No mastoid pain, no fever. Tympanic membrane red and bulging in the posterior half. Nasal and pharyngeal examination negative. Instillations of hot carbolised glycerine and hot compresses prescribed. Twenty-four hours later: No relief. Membrane redder and more bulging. Paracentesis under local anæsthesia; no pus. Pain grew worse. At night attack of syncope, crises of nystagmus, general convulsions. Meatus blocked by a vermicular body. This was seized, and a living male ascaris 15 cm. long removed. Child slept most of the day, the tympanic incision healed, and recovery was complete. No history of passing of worms.

Macleod Yearsley.

MISCELLANEOUS.

Radium in Diseases of the Upper Air-passages.—Bryson Delavan.
"Laryngoscope," October, 1917, p. 776.

Delavan presents a summary of 184 cases treated with radium out of a total of 422 cases of cancer of the upper air-passages treated at the Memorial Hospital in New York City. The best results were obtained by the prompt treatment of early cases—a state of affairs which applies also to the surgery of cancer.

Bryson Delavan states that in the treatment of nasopharyngeal fibroma the use of radium has proved encouraging. In the treatment of non-malignant intralaryngeal growths many tumours of various histological structure have disappeared in a number of cases with complete restoration of the singing voice. The treatment of papilloma of the larynx is particularly promising, in view of the success already attained with this form of growth, as well as with warty growths in general in other parts of the body. Freudenthal reports a case of fibrosarcoma of the right maxillary sinus which was cured, and a case of sarcoma of the tonsil in which the growth disappeared and remained in abeyance for six years, when it recurred and the patient died. The question of cure should be dealt with very carefully. In cavities like the nose and nasopharynx tumour tissue may still be present, though not visible by ordinary methods of examination. Delavan reports on two cases of epithelial cancer involving the left side of the pharynx, the base of the tongue, tonsil and interior of the larynx. Radium caused complete cessation of the abnormal secretions and fetor. Ulceration rapidly diminished, and in one case disappeared. The infiltrated tissues became soft, the voice clearer, and both patients were able to swallow without pain. Though the disease terminated fatally the relief obtained well repaid the patients for any inconvenience that the radium had caused. The failure to gain uniformly reliable results is probably due to imperfect knowledge of the methods by which the radiations can be controlled, of the amount of radium which should be used, and of the correct duration of the exposures.

Richardson, in discussing Delavan's communication, stated that he had had very unfortunate results after the use of radium in four cases of cancer of the tonsil and in one of cancer of the cheek. All died in the usual course, but the radium gave wonderful relief from all the disagreeable symptoms. There was very little odour, and the patients were fairly free from pain. Lynch reported on four laryngeal cases, one of which had had no recurrence for eighteen months. This patient received no benefit until the radium was put into the laryngeal cavity through a tracheotomy tube. He had previously had a recurrence of the growth after operation by suspension laryngoscopy. A second case, after a third occurrence, was thought to be inoperable. Applications of radium caused complete subsidence, and after six months there was no indication of further recurrence. Shurly had operated three times on one case which involved the soft palate, the upper jaw and the antrum, and after each operation there was a very slow recurrence. For the past three years radium has been used at intervals of from three to six months. Harmon Smith believed that the good results that are obtained from radium are due to the fact that all tumour growths vary in their virulence. Cases benefited by radium are the less virulent ones. Smith had sent a

number of inoperable cases for radium treatment after a preliminary tracheotomy. All of these went progressively on to death. Coffin and Pierce had had discouraging results from radium treatment, and Beck had had similar experience in the case of deep-seated growths. One speaker drew attention to the severe burns which may follow the applications. It is difficult to screen the radium properly when placed in the mouth. He emphasised the late appearance of the burns in some cases.

Jackson described the technique adopted in the treatment of carcinoma. Tracheotomy is performed, and the capsule containing the radium, anchored to the cannula, is pushed upwards into the larynx. The capsule is composed of gold, on to which a coating of hard rubber is vulcanised. The threads from the radium capsule are tied to the shield of the cannula.

Delavan, in closing the discussion, stated that of the 184 cases treated by radium, 22 are believed to have fairly retrogressed. Seventy-nine cases had improved. Delavan holds that we do not get the true statistics of the surgery of laryngeal cancer, and that, if we did get them, we should have a pretty ghastly record.

J. S. Fraser.

Mycosis Fungoides.¹—**Jos. C. Verco.** "Medical Journal of Australia," April 20, 1918.

A man, aged forty-five, had right upper maxilla removed for a growth which filled up the cavity of the antrum, and extended through its outer and back walls and down through the alveolus. Laboratory examination reported it a round-celled sarcoma. At the time of operation a round red spot was noticed on the skin of the back. It looked like ringworm. Later other blotches appeared on the trunk, which were diagnosed by a skin specialist as "the pre-mycotic stage of mycosis fungoides." The history of the case is continued for two years. Up till the time of the man's death there were eruptions on various parts of the body, but no recurrence of the growth at site of operation. Four months after the jaw operation a large mass was removed from the foot. Histological appearance was identical with that of growth from superior maxilla. The question arises, "What was the nature of the maxillary growth?" Clinically and histologically it resembled a round-celled sarcoma, but the histologist recognised a difference between its structure and that of typical sarcomata: the cells were not quite the same as those found in malignant disease. As the tumour on the foot was without question a growth in a typical case of mycosis fungoides, the tumour in the jaw was unquestionably mycosis fungoides too. The maxillary growth and the cutaneous disease cannot be regarded as merely coincident, and otherwise unrelated. Mere coincidence is disproved by identity in structure of the maxillary and cutaneous tumours. The two must be regarded as having some causal connection with each other. If the time relation signifies anything, the skin disease was secondary and due to the maxillary disease. A common precedent cause can be conceived for both conditions, so that they are fraternally, not paternally related. Was it possible that the infective agent in the jaw tumour during operation was absorbed by lymphatics, entered wounded blood-vessels, or was swallowed, and thus infected the cutaneous tissues? A detailed report by the histologist is appended to Verco's paper.

A. J. Brady.

¹ Mycosis fungoides is a rare and fatal skin disease characterised by the appearance of multiple fungating tumours, probably granulomatous. Cause unknown.—*Ed. J.L.R.O.*

Relation of the Glands of Internal Secretion to Otolaryngology.—
Joseph C. Beck. "Laryngoscope," May, 1917, p. 422.

Beck considers the thyroid, thymus, hypophysis, and adrenals in their relation to otolaryngology. The hypophysis and adrenals are known to have a specific influence on the growth of bone, while the thymus influences the nutrition of bone.

According to Beck, there is in *atrophic rhinitis* a chronic focus of infection in the intestine, tonsil, teeth, nasal sinuses, etc. This focal infection produces changes in some of the glands of internal secretion and disturbs their harmonic action. This results in rarification of the bony framework of the nose, and is followed by a secondary degenerative change in the mucous membrane with metaplasia of the epithelium. Finally, we have a low-grade infection by a great variety of organisms among which we find the so-called specific foetid bacillus of *œzena*. Beck treats his patients with glandular extract by mouth or hypodermically for a period of one to six months, and after a time repeats the treatment. He finds that in some cases he gets no change, but at other times he obtains striking results.

Hyperplastic Ethmoiditis or Non-suppurative Sinusitis.—Beck believes that non-suppurative sinusitis is invariably associated with cases of so-called bronchial asthma. Nasal polypi are always present in the later stages. He holds that these conditions are due to a hyposecretion or disharmony of the endocrine glands, and that the underlying cause is a focal infection, most frequently from the intestinal tract. These patients are sensitised particularly to protein or albumen, and their attacks are a true anaphylaxis. Treatment consists in removing the original cause—the focus of infection—and the administration of glandular extract. The middle turbinal and ethmoid must also be attended to. Beck states that permanent cure cannot be obtained by operative procedures alone.

Otosclerosis.—Beck has been struck by the similarity of the spongyfication in otosclerosis to that seen in osteomalakia, arthritis deformans, and in the bones in early pregnancy. He treats otosclerosis by means of adrenalin for the most part, but in many cases he combines it with extract of the thymus and pituitary. He does not claim to have cured a case or even to have improved the hearing, but he does claim to arrest the progress. He gives injections of from 1 to 15 minims of adrenalin in gradually increasing doses. The treatment is carried out every second or third day for a period of six weeks to three months, and is controlled by measurement of the blood-pressure. Treatment is then interrupted for the same period and then resumed for the same period and then stopped.

J. S. Fraser.

"THE CONSERVATIVE MASTOID OPERATION."

REVIEW.

Diagnosis and Treatment in Cases of Otitis Media (Mastoid Disease). By Charles J. Heath, F.R.C.S. Eng., Consulting Aurist, Metropolitan Asylums Board; late Surgeon, Throat Hospital, Golden Square, London. A paper read before the Hunterian Society, London. Revised and amplified by the addition of numerous notes and illustrations explanatory of the indications for the performance of the author's conservative mastoid operation in order to save the hearing of the discharging ear with perforation of the drum-head whether caused by inflammation (otitis media) or by violence (shell-explosions). London: Baillière, Tindall & Cox, 8, Henrietta Street, Covent Garden, 1919.

In this, his most recent pamphlet, Mr. C. J. Heath expresses surprise, and some of his followers have echoed the complaint, that in a certain modern text-book on otology no mention whatever is made of his "conservative mastoid operation."

Obviously, such an omission may be due to one of three possibilities: either, in the first place, the authors of that book had never heard of "Heath's operation" (this I think we may exclude); or, secondly, envy at his success had sealed their lips; or, thirdly, they deemed the operation unworthy of notice because, in their opinion, the claims made for it had not been substantiated. In other words, they held that the Heath operation had not won what is called "text-book recognition."

Now, I have not yet sought any opportunity of ascertaining from any modern otological author which of the foregoing possibilities may have been the real cause of their silence, preferring by an examination of the pamphlet now before me, and of Mr. Heath's many former publications, to work out this interesting problem for myself.

It has not proved to be insoluble!

The above brochure, as everybody knows, is merely the last of a long series of productions from the same busy pen on the same subject. Not that Mr. Heath's pamphlets have only concerned themselves with this one subject. By no means. We have already had in this Journal an opportunity of examining a publication written by Mr. Heath which made the interesting claim that he knew how to cure deafness by blistering the tympanic membrane (*JOURN. OF LARYNGOL., RHINOL. AND OTOL.*, vol. xxvii, p. 518). But that was merely by the way. Mr. Heath's reputation, his professional life and work, are wrapt up in his "conservative mastoid operation," and it is our duty to discover, if we can, what of worth and of enduring quality lies in this product of his surgical theory and practice.

His methods have now been before the community of otologists, both in Britain and in America, for more than ten years, and we ought therefore by now to have come to some definite conclusion upon them. According to our author, indeed, it seems that many of us have already done so, since he vigorously upbraids us for still persisting in what seem to him to be old and bad ways. In the preface to the present pamphlet he implicitly despairs of the older school of otologists, washes his hands of them, and throws himself confidently into the arms of the unprejudiced junior cohort.

What is this "conservative mastoid operation," and what are the indications for its use?

Mr. Heath is enthusiastic. Mr. Heath is voluble. Mr. Heath is eloquent. But, as an exponent, Mr. Heath is obscure. Consequently all I can do is to give my own impressions of what I believe to be Mr. Heath's meaning. And if I misapprehend his intentions and misstate his position I can only regret the circumstance, and implore him to adopt in future the old rules in exposition of simplicity, brevity, and absence of repetition.

With regard to the operation, it consists in an opening up of the mastoid antrum through the mastoid process, as in the radical operation. But the procedure stops short at this point. The "bridge" over the aditus is not broken down and removed, nor is the cavity of the tympanum cleared out. The posterior wall of the bony meatus, however, is chiselled down as in forming the "facial ridge" of the radical operation. A flap of skin is cut from the membranous meatus as in the same operation, laid back into the bone cavity to assist in lining its walls, and the post-aural incision is closed. There are, in addition to these features, many details and refinements upon which Mr. Heath lays great stress, but they need not detain us.

Mr. Heath seems—the point is not altogether quite clear—to seek an obliteration of the antrum, and he insists—this point, on the other hand, is perfectly clear—upon leaving untouched the membrane, ossicles and other members of the tympanic apparatus with the object of "conserving" the hearing. The operation is thus a combination of some of the steps of the old "cortical" operation with some of the steps of the "radical" operation. In principle it is a drainage of the antrum as in the former, but the drainage is directed into the external meatus as in the latter.

Much discussion, some of it quite uproarious, at one time raged round the question as to whether or not it was Mr. Heath who had been the first to devise this operative compromise. As if that mattered!

In point of fact, the operation is undoubtedly Mr. Heath's, if not perhaps by birth at least by adoption, and by a loud, incessant advocacy of the measure, for, it would seem, all and every variety of suppuration of the middle ear.

Does he, then, say that it is suitable for every variety of middle-ear suppuration? To be frank, I am not quite certain.

For enlightenment upon this important point I long ago made a search through such of Mr. Heath's pamphlets and discourses as were accessible to me. But the search was vain. The real indications for the operation as performed by Mr. Heath himself seemed to be mysteriously elusive. No sooner had I, as I thought, grasped one principle of its application, than it seemed to slip away from between my fingers, leaving me as empty-handed as before. But the first sight of the present pamphlet filled me with renewed hope, as it has been written, we are told in the preface, in reply to a request for the indications which was put to him at the International Congress of Otology in Boston in the year 1912, nearly seven years ago.

Mr. Heath, having cogitated this question for seven years, now tells us—what?

Really! It is difficult to say. He tells us many thing in this publication; he seems, indeed, to be very busy answering a great many questions; but in so far as the indications for his operation are concerned I have to admit that he leaves me still groping in the dark.

As has been said, he tells us a great deal, laying down the law to us very emphatically. Amongst other things he tells us that this operation "conserves" the hearing. Yet neither in this nor in any other article or pamphlet of his that I am acquainted with has Mr. Heath ever supplied us with the detailed results of the hearing-tests in the cases he has operated on. Some are mentioned to be sure, and they show improvement in hearing. But what of that? We can all say as much about many cases of the radical mastoid operation, which Mr. Heath looks upon as destroying the hearing.

There is a second item of information Mr. Heath is fond of imparting, which some ten years ago when first it was promulgated awoke considerable surprise. Heretofore, pathologists and microscopists have uniformly assured us that in acute, and also in chronic middle-ear infection, the seat of intensity of the disease lies in and about the chain of ossicles in the attic. Here, we were taught, sepsis induces its most striking effects; here pus first forms; here the disease lingers longest; and here its after-effects are most prominent and permanent.

All a mistake! The slow, tedious accumulation of knowledge made by the great pioneers of otology is only so much rubbish. That part of the middle ear cavities which is the hardest hit in septic infection is the mastoid antrum. So says Mr. Heath. Hence, he tells us, the title he has given his brochure, "Otitis Media (Mastoid Disease)"; meaning, thereby, that the middle-ear changes are merely a by-product, a side-issue; it is the mastoid antrum that the bacteria of sepsis select.

Mr. Heath, however, seems at times to be a little uncertain about this "fact"—at least, his opinion as to its relative frequency varies from one page to another. On p. 4 disease in the antrum is said to be "the *usual* cause" of tympanic damage; on p. 8 (foot-note) "persistent discharge from the ear," we are told, "is *practically always* due to mastoid disease" (what, by the way, does Mr. Heath mean by the expression "practically always"?): then on p. 14 we read that "during operations on cases of chronic aural suppuration some part of the walls or tributaries of the mastoid antrum is *invariably* found to be diseased" (*italics mine*).

Of this "usual," "practically always," or "invariable" factor in suppuration of the middle ear the only evidence offered is a photomicrograph of the inflamed lining membrane of the antrum of one single case!

The JOURNAL OF LARYNGOLOGY RHINOLOGY, AND OTOTOLOGY circulates among otological experts, and if I make a mistake I may expect to be promptly corrected. But with a due sense of my responsibilities I aver that general otological opinion is directly contrary to that of Mr. Heath in this matter.

What I believe to be a correct statement of our experience is as follows: We certainly do encounter pus in the antrum at operation, with, but most usually without, obvious disease of its lining membrane or of its bony walls. On the other hand, in the great majority of cases of "discharging ears" upon which we operate we find evidence of disease in the tympanic cavity, in and around the ossicles; on the roof, promontory and walls; in the sinus tympani and Eustachian orifice. That is to say, our operative experience supports the orthodox view and opposes Mr. Heath's opinion.

But if this, the conventional view, be correct, what pathological basis has Mr. Heath for his operation? Obviously just as much as, but no more than, the old cortical mastoid operation has. Mr. Heath's logical

mind clearly comprehends that fact. Consequently, the antrum *must* be the main seat of the disease. *Q. E. D.*

We turn once again to the question of the indications for Mr. Heath's conservative mastoid operation.

The plain question set Mr. Heath at Boston in 1912 receives here a reply which he calls "somewhat long yet simple withal." Most of his readers will find it somewhat long and exceedingly complex withal.

As far as I can make it out, Mr. Heath cherishes the belief that he has recourse to his conservative mastoid operation if and when, there being suppuration in the ear, (1) the patient cannot blow air through the Eustachian tube and out by the perforation in the membrane; or (2) the patient's deafness is growing worse; or (3) there is pain, or vertigo, or pyrexia, alone or in combination. These indications seem simple enough to be sure. But they are by no means so plainly set out in Mr. Heath's pages as they are here, and even as they stand, stripped bare of digressions and assertions, they leave one or two points quite unsettled.

I cannot find it anywhere stated, for example, whether these indications apply both to acute and to chronic suppuration in the ear. But what is still more puzzling is that when we turn to the only two cases detailed (partly) in this brochure in which the question of his operation arises, we find that Mr. Heath does not himself adhere to his own principles.

In Case 2 of the holograph note-records at the end of the pamphlet, for example, there was no pain, no fever, no vertigo, and the discharge was only of thirty days' duration. There was present a small perforation in the membrane, but there is no note that the patient was unable to blow air through it. Drainage, we are told, was not obstructed by swelling of the tympanic mucosa. The hearing varied from day to day, a 50 in. watch being heard at distances from two inches to half an inch. No other hearing-tests are noted. Nevertheless, in spite of this formidable array of negatives, Mr. Heath's notes run: "Conservative mastoid operation needed to arrest disease and thus prevent deafness."

Now we do not mean to imply that Mr. Heath cannot give us a reason for performing a mastoid operation in this case. All we say is, that the reasons for the operation given in the text do not apply in this case, and yet Mr. Heath advised operation. The statement that the operation was performed "to arrest disease and thus prevent deafness" is, of course, no excuse for performing this particular operation. It is merely begging the question—merely assuming what Mr. Heath has not yet been successful in proving.

This is what I mean when I say that his indications strike me as ambiguous and confusing.

These considerations are, to be sure, rather damaging to Mr. Heath's claims and contentions, but we have not yet reached the end of our critical analysis.

On pp. 54 and 55 there is a table drawn up by the author in which he contrasts his operation mortality (1 in 360 cases) with that of the Edinburgh Clinic (1 in 8 cases). This contrast obviously means nothing, since we do not know whether the respective operators were handling the same type of case. But the interesting item in these figures is, curiously enough, Mr. Heath's solitary death. It followed the conservative operation, and his notes upon it read as follows: "This single death was due to meningitis. As no *post-mortem* examination was made the route of

invasion was not identified. Neither the meninges, the labyrinth, nor the lateral sinus were exposed at the operation. There was probably some latent disease in the labyrinth, as both ears had been discharging for about thirty years. The operation was undertaken too late."

Our comment upon this case-report is simple but hard. Assuming that the above note contains the entire case-history, then the misfortune was not that the operation was too late, but that the operation performed was inadequate to the circumstances.

Here is a patient with suppuration in the ears of thirty years' duration, who was operated on by a method which does not reveal to view the external semicircular canal, the promontory, the region of the oval window. Further, there is no record that the labyrinth, prior to operation, had been tested either as regards hearing or as regards the vestibular sense. In most otological clinics this patient might have had his labyrinth opened and drained—

Instead of which Mr. Heath performed his *conservative* operation—this operation which, he says, conserves the hearing, but certainly may, as the above case shows only too plainly, also conserve the disease.

What, by the way, are Mr. Heath's indications for using this *conservative* operation instead of a radical operation in such a case?

We have no desire to be unjust or unfair to Mr. Heath, or indeed to anyone who is trying to ease the grievous burden of the otologist labouring under the harassing problems of ear disease, which, we can assure Mr. Heath, he is not the only one to feel.

It is possible that the future may show it to be advantageous in many cases of ear suppuration to drain the middle ear through the antrum if discharge does not dry up after a few weeks of free drainage through the membrane coupled with simple meatal cleanliness. Such a possibility we may concede. Furthermore, Heath's modification of the old cortical operation, it is conceivable, may come to replace the latter operation in some cases, just as it is usual, and has long been usual—long before Mr. Heath began his headlong crusade—to stop short of complete radical mastoid evisceration in certain types of cholesteatomatous disease.

All that may be possible, as we say—the matter is one for detailed experience—but it is also necessary for us to remark clearly and unequivocally, that up till now Mr. Heath himself has not even begun to lead the evidence in his own favour. And the few cases he has communicated on the present occasion, casually, as it were, and by haphazard, have certainly been distinctly unfortunate for his "raging, tearing propaganda."

Mr. Heath begs and prays and scolds and threatens. He waxes indignant and scornful, angry and pathetic, by turns. He rakes the universe for metaphors more or less telling, for similitudes more or less exact. In a word, he appeals to mankind with all the old familiar tricks of the orator.

But alas! In otologists' ideas at least, fine words butter no parsnips. What he omits is the one thing needful. He omits case-records. He omits hearing-tests, taken, not by himself, but by an independent witness; not in one or two or twenty cases, but in every single one of his cases as they come.

Above all, he omits to mention the condition of the ear as regards discharge three months, six months, a year after operation. This omission by the introducer of what is claimed to be a new operation seems scarcely

credible, but it is, nevertheless, a fact, that Mr. Heath, as far as I know, has never yet furnished either his supporters or his critics with a complete record of the results in the cases he has operated on.

The consequence is that no one, perhaps not even he himself, knows the percentage of cases which dry up and remain well after his operation, and the percentage that require further operation.

And until he does supply us with these simple, essential data, otologists will, I fear, be justified if they go on writing books as if Mr. Charles Heath had never been born!

Dan McKenzie.

THE BROECKAERT FUND.

To the Editor of THE JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY.

SIR,—You took a kind interest in the establishment of the Broeckaert Fund. On the return of Madame Broeckaert and her family to Belgium its purpose has come to an end. I hope you will allow me to give a short account in your columns of its administration.

Altogether £562 0s. 9d., representing contributions (including interest) coming from American, British, Dutch and Scandinavian *confrères* of the late Dr. Jules Broeckaert, was placed in my hands.

Of these £395 0s. 9d. was spent from the beginning of November, 1916, to the end of February, 1919, in the support of Dr. Broeckaert's family whilst they were living in England. A cheque for £167 was handed to Madame Broeckaert on the eve of her departure for Ghent, to enable her to re-establish her home.

The subscribers will be glad to learn that the late Dr. Broeckaert's house was but little damaged during the war, and that our deceased *confrère's* eldest son, M. André Broeckaert, was the first Belgian soldier to enter his native town after the retreat of the invaders.

Madame Broeckaert wishes me to express to all those who have honoured her husband's memory, particularly to the collectors of the fund, her own and her children's sincerest thanks.

I should be glad if American, Dutch and Scandinavian journals devoted to our specialty would reprint this account.

I am, Sir,

Yours faithfully,

FELIX SEMON.

RIGNALLS, GREAT MISSENDEN, BUCKS;

February 21, 1919.

NOTES AND QUERIES.

SUMMER CONGRESS OF LARYNGOLOGY, LONDON, 1919.

The Section of Laryngology of the Royal Society of Medicine is showing increased energy with the return of many of its members from the war. Its meetings have shown large attendances during the war, being favoured by the

presence of many American and Overseas Laryngologists. It has therefore decided to convert its annual gathering in May into something more than the usual clinical meeting.

On Friday, May 2, there will therefore be a *Summer Congress*. Papers will be read in the morning: demonstrations of cases, operations, specimens, instruments will take place in the afternoon: and it is proposed to arrange a pathological museum of specimens relating to the subject. We understand that all Overseas Laryngologists will be heartily welcomed.

Those who intend to read papers or join in the discussion are requested to notify the Honorary Secretaries—Mr. F. A. Rose, 68, Wimpole Street, W. 1, or Dr. Irwin Moore, 30A, Wimpole Street, W. 1.

FORTHCOMING MEETINGS.

The next Monthly Meeting of the Section of Laryngology (Royal Society of Medicine) will be held on Friday, April 4, at 4 p.m., at No. 1, Wimpole Street.

A conjoint Meeting of this Section with the Section of Ophthalmology will be held on Wednesday, April 2, at 8 p.m., when a joint discussion will be given on "Injuries and Inflammatory Diseases affecting the Orbit and Accessory Sinuses." To be opened by Messrs. L. V. Cargill, Seecomb Hett, A. W. Ormond and E. D. D. Davis.

The next Meeting of the Section of Otology will be held on Friday, March 21.

THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL SOCIETY.

The President of this Society for the current year is Brigadier-General H. S. Birkett. It will hold its Annual Meeting on June 6 and 7 at Atlantic City.

AMERICAN MEDICAL ASSOCIATION, SECTION OF OTO-LARYNGOLOGY.

The Annual Meeting of this Section will be held in Atlantic City between June 9 and 13.

AMERICAN LARYNGOLOGICAL ASSOCIATION.

The Annual Congress will be held on June 16, 17 and 18 in Atlantic City conjointly with the American Congress of Physicians and Surgeons.

SOCIÉTÉ BELGE D'OTO-RHINO-LARYNGOLOGIE.

We rejoice to hear that our brave Belgian colleagues are already arranging for the revival of this society, and that it is hoped to arrange the first meeting for the month of July in Antwerp. Further particulars can be obtained from Dr. Trétop, 46, Avenue Van Eyck, Antwerp, Belgium.

ERRATUM

On line 6, p. 66 of the February number of the JOURNAL, *for* "fitted" *read* "pithed."

THE
JOURNAL OF LARYNGOLOGY,
RHINOLOGY AND OTOTOLOGY.

Original Articles are accepted on the condition that they have not previously been published elsewhere.

If reprints are required it is requested that this be stated when the article is first forwarded to this Journal. Such reprints will be charged to the author.

Editorial Communications are to be addressed to "Editor of JOURNAL OF LARYNGOLOGY, care of Messrs. Adlard & Son & West Newman, Limited, Bartholomew Close, E.C. 1."

Authors of Original Communications on Oto-laryngology in other Journals are invited to send a copy, or two reprints, to the JOURNAL OF LARYNGOLOGY. If they are willing, at the same time, to submit their own abstract (in English, French, Italian or German) it will be welcomed.

THE MINISTRY OF HEALTH AND THE PREVENTION OF DEAFNESS.

WERE the old adage that "A stitch in time saves nine" true of nothing else, it would be true of deafness. The appearance of Dr. Kerr Love's book (reviewed on another page), with its sub-title, "An Essay on the Prevention of Deafness," comes at an opportune moment, when the long-hoped-for Ministry of Health is upon the eve of materialising. It gives the key to a constructive policy in the work of prevention deafness by such a body. There is much—very much—to be done in London, and, indeed, in all great cities of the Empire. There is, we understand, a committee now being formed of the Otological Section of the Royal Society of Medicine to consider the relations between a Health Ministry and ear disease, and if otologists will but rouse themselves to pay more attention to prevention they can do great things. There is too great a tendency among otologists to yearn for the dramatic—to achieve the glamour of some new operation. The existence of otology in the past has been amply justified by the great improvements it has made in surgical treatment of ears already seriously diseased; to justify its future it must turn to prevention. The more prosaic, but infinitely more valuable line of work which tends to the stamping out of deafness has been too long hidden by the glare of the operation foot-lights. The writing on the wall warns us that the future of otology lies in prevention. The satisfying feast of operative otology should not deter us from reading and acting upon that warning.

The ways by which deafness can be prevented are largely open to the light; the many advantages which would accrue to the State are patent to everyone. It is right that otologists should indicate to the nascent Ministry of Health, with no uncertain mind, how it can be made an efficient instrument to the required end.

A lesson can be well taken from the work of the Glasgow authorities

acting under Dr. Kerr Love's guidance. The School Board of that city has the assistance of a consulting otologist, a consulting ophthalmologist, and a consultant for mental deficiency. Holding central and official positions, these experts can point out and advise upon a multitude of side-issues that directly or indirectly concern their special subjects.

Similarly, in the projected Scottish Board of Health and the English and Welsh Ministries of Health, there should be appointed expert aural, ophthalmological and mental deficiency advisers. In the case of the last named this will be inevitable when the machinery for dealing with the feeble-minded is included, and it is also clearly needed for the other two special branches.

In the Ministry it is expected that there will be departments for venereal diseases, school medical inspection, medical treatment of school children, hospital accommodation, care of the expectant mother, and the propagation of knowledge on health subjects, and the work of these departments will, in some instances, of necessity overlap. The factors in the prevention of deafness lie in every one of them. The aural adviser, therefore, efficiently to carry out the work of prevention of deafness must be in such a position that he can act through all departments by advising on every point connected with it. He should be able to bring his weight to bear in appointing competent otologists to fever hospitals, to school inspection staffs, to school clinics. He should be able to ensure that the treatment of children's ears is efficiently carried out *by aurists* and not paralysed by pernicious "care" committees, who, by multiplying forms, wasting stationery, and red tape generally, come between the doctor and the nurse and their object—the child.

Properly organised and efficiently directed, the otological apparatus of the Ministry of Health could do great things, preventing misery to uncounted thousands, and saving wealth to the State in sound citizens and money hitherto expended in dealing with preventable conditions.

M. Y.

AURAL BACTERÆMIA (AS APART FROM PYÆMIA).¹

BY RICHARD LAKE, F.R.C.S.

As far as I know, Gruening, of New York, was the first person to describe aural bacteræmia, and the most important contributors to the subject have been Duel, Kerrison, Shepherd, Richardson, and Oppenheimer.

Bacteræmia may be defined as a morbid condition of the blood, due to the presence in it of living micro-organisms. Aural bacteremia requires a little more minute description. That is to say, it is a morbid condition of the blood, in which living bacteria are present in the blood-stream. It has to be distinguished from conditions in which there is a casual entry of bacteria or their products into the blood, such as occurs in pyæmia, causing a separate and distinct series of clinical symptoms. These symptoms are sometimes dependent upon the sudden influx into the blood of bacteria and septic clot, and in addition to the symptoms due

¹ Paper read before the Otological Section of the Royal Society of Medicine, London, April 19, 1918.

to the bacteria, the condition gives rise to those due to mechanical causes, *i. e.* the presence of foreign bodies in the blood, giving rise to static abscesses in different parts.

These abscesses are, as we shall see, a comparatively rare condition in bacteræmia.

Etiology and Pathology.—The cases of aural bacteræmia which have come under my observation may be divided clinically into pre- and post-operative. Again, one may divide these cases into two classes. In the first class of case the bacteria which have succeeded in finding an entrance into the blood are unable to live in it for any length of time, and are soon destroyed by the inhibitory action of the blood. In the cases which belong to the second class the inhibitory action of the blood is in abeyance, and the bacteria remain during the course of the disease constantly, or almost constantly, in the circulation.

The presence of the bacteria is indicated by the temperature. During the time the temperature is rising, and until it attains its maximum, bacteria are found in the greatest numbers in the blood. As the temperature falls they diminish in number; in those cases in which they are constantly present the temperature never falls very low. In such cases we must be particularly careful, as they are very apt to terminate fatally. This applies also to cases in which the rise and fall of the temperature is excessive.

A study of the literature of the subject, and the results of my own investigations, indicate that the various forms of streptococci are more frequently the cause of this condition than staphylococci.

Where the ordinary symptoms of lateral sinus infection, as shown by the presence of rigors and of pyæmic abscesses, are not present, the involvement of the lateral sinus is comparatively rare, but at least one case has been reported in which relief was obtained by removal of clot from the sinus when there were no symptoms pointing to lateral sinus infection. The causation of this condition should be sought for in the anatomical peculiarities of the mastoid. Although bacteræmia is not peculiar at all to aural cases, it is comparatively rare in bone disease elsewhere. What apparently happens is that pus is held up in the small cellular spaces of a mastoid which is affected either by an acute or chronic osteitis, with its engorged mucosa, and its numerous widely-opened uncontractile vessels, through which the bacteria contained in the part must find their way readily into the blood-stream. Bacteræmia appears most frequently as a complication of acute otitis media and sub-acute otitis media, especially in those cases in which the mastoid process is principally involved in the inflammatory process, as apart from the middle ear and its immediate neighbourhood. In other instances it occurs in cases when the acute symptoms subside, mastoid tenderness is almost absent, even if it does not entirely disappear, and there is perhaps a tendency to a recurrent form of the acute condition. In the majority of instances the patients are young, and most frequently children.

Very rarely in bacteræmia, as apart from pyæmia, do we get the formation of abscesses in distal parts. They may, of course, be connected with some slight clot-formation of some smaller blood-vessels, but they certainly are not of necessity combined with disease of the lateral sinus, as seen in Case 3.¹

¹ For cases see Meeting of the Otological Section of the Royal Society of Medicine, April, 1918 (p. 123 of this issue).

Symptomatology.—In aural cases one invariably finds that one has to deal with a mastoiditis, either of recent origin, or, perhaps, of some duration, but not a really chronic suppuration. Or quite frequently there are no signs or history of aural discharge, and no evidences in the drum itself that there has been any trouble in the middle ear. There may be bulging of the posterior meatal wall. There will be tenderness—more or less marked—over the mastoid area, either in the region of the antrum or elsewhere in the mastoid process. The temperature is not of necessity very high. It may be anywhere from 100° to 104°F., or even 105°, but there will be no history of rigors. I have only once seen even a questionable one; in fact the absence of rigors in the course of the disease seems to me to mark the difference between pyæmia and pure bacteræmia, like the distinction made in pre-bacterial days between septic poisoning and septic infection and pyæmia—not too definite. The patients generally have a peculiar characteristic appearance. They are usually bright-eyed: the complexion is often muddy, especially if the bacteræmia has lasted more than a short time. Cerebration is, if anything, more active than normal; there is certainly no clouding of the intellect. The patients are frequently—in fact generally—quick, and there is even what one might call a cerebral stimulation. Delirium seems to be usually absent. Babinski's sign is absent, and the cerebro-spinal fluid normal. The appetite is not necessarily much affected, though there will probably be a certain amount of thirst. The temperature tends to have a fall and rise at intervals of twenty-four to forty-eight hours. If an operation is done there generally is a definite fall in the temperature chart, even to normal, though in most cases of bacteræmia a rise will occur again within a few hours. The blood taken for investigation should be taken either close upon or at the height of the temperature rise.

Prognosis.—The prognosis in bacteræmia, when it can be separated from pyæmia, is not bad.

Treatment.—In mild forms of bacteræmia no specific treatment is necessary—that is to say, cases in which a series of successive cultures made from the blood shows a steady diminution in the number of microbes. I think myself, however, that one should always open the mastoid if one had reason to suspect that it had been the original source of infection, without waiting to observe whether the bacteria diminished in number or not; that in such cases pus should be searched for and evacuated, and this should, perhaps, be considered as the most important preliminary treatment; one should not proceed to examine the lateral sinus unless one found disease so intractable as to justify a second operation. One should remove the whole of the cancellous bone as deeply as necessary, leaving only hard bone, and being perfectly certain that every possible focus of suppuration has been removed. If marked signs of disease are found one, would at the same time incise the tympanic membrane and freely enlarge the aditus. In addition to operative treatment the following three methods may be of use, all of which I employ simultaneously:

(1) Treatment by autogenous vaccine, and while this is being prepared, for the sake of saving time, one uses a stock vaccine of the correct microbe, or anti-streptococcal serum is used as in Cases 2 and 3.

(2) One should then employ the best blood antiseptic which is available; in my opinion the best is urotropin. This should be given in full doses.

(3) Finally, normal saline solution should be used liberally, preferably, of course, by subcutaneous injection. Failing this, it should be administered by rectum. This method cannot be employed for very many days at a time. Even in quite small children one should use at least a quart of normal saline, and in adults two to four quarts a day in severe cases.

As regards urotropin, this must, as I have previously said, be administered in full doses, despite the fact that it is said to—and undoubtedly does at times—have a bad effect upon the kidneys. As long as the saline solution is used freely, it is extremely doubtful whether renal irritation would ever be produced, or any of the other disturbances attributed to this drug, on account of its great dilution. But, to my mind, its extreme value in combating bacteremia more than compensates for any risk that may be run in the direction of the condition of the kidneys.

CARCINOMA OF THE LARYNX: LARYNGO-FISSURE; PATIENT FREE FROM RECURRENCE AFTER ONE YEAR.¹

By E. HAMILTON WHITE.

Montreal.

THE patient, a male, aged fifty-eight, was first seen on June 8, 1917, complaining of weakness of his voice after talking for a short time. He had noticed this in March, 1917, and had an impression that he might have injured his throat in some way by a hard particle of food.

Apart from this weakness of his voice he had no complaints or discomfort in his throat. The general history was without interest beyond the fact that he had been a heavy smoker for some years.

The examination of the larynx showed a small reddish tumour at the junction of the posterior and middle thirds of the left vocal cord. The tumour was about the size and shape of half a small pea; there was no limitation of movement of either cord. The mucous membrane of the larynx showed no congestion, so that the tumour showed up well with sharply defined margins.

The general physical examination by Dr. W. F. Hamilton showed nothing of moment, and the Wassermann blood test was negative.

The patient was told that in all probability the condition was malignant and he consented to whatever operative measures were thought advisable.

On June 21, 1917, the projecting tumour was removed with local anæsthesia by direct laryngoscopy, and Dr. Oertel reported the tissue malignant (epithelioma).

On June 26, 1917, laryngo-fissure was carried out under chloroform anæsthesia. Dr. Garrow, who had seen the case with me in consultation, kindly assisted.

After median tracheotomy, the larynx was opened and the left cord removed by stripping it off with the perichondrium. The left arytenoid cartilage was removed along with the cord, making a wide removal without approaching the site of the tumour at any point. Sections of

¹ Reported at the Montreal Medico-Chirurgical Society on February 7, 1919.

the tissue removed showed that the new growth had extended fairly deep and was invading the arytenoid cartilage. No special difficulty was met with during the operation, and the patient made an uninterrupted recovery.

The wound was closed at the end of the operation, but broke down and healed by secondary intention. The tracheotomy tube was removed at the end of the operation, but had to be re-introduced after his return to his room and was left in for three or four days. There was difficulty at first in swallowing liquids, which were apt to be coughed out through the wound, but this soon passed off and, on leaving the hospital on July 30, he could swallow all types of food without difficulty. His voice was of whispering quality, but fairly strong. The external wound was healed except for a small sinus at the lower part. The larynx was not completely epidermised on exit from hospital.

On October 1, 1917, he reported for examination. His general health had been excellent, and the external wound had healed completely shortly after he got home (Gaspé, P. Q.). The examination of the larynx showed the cavity completely epidermised without any tendency to cicatricial stenosis, and no sign of recurrence. His voice is strong, but, of course, only of the whispering quality.

On July 3, 1918, a year after operation, the patient again reported for examination. During the interval since his last visit he had crossed to England and spent the winter in his old home on the Island of Jersey. His general health has been excellent, and he has no inconvenience in swallowing either liquids or solids.

On November 6, 1918, the patient reported again with the voice somewhat stronger, and no sign of recurrence.

The case illustrates the satisfactory result that can be obtained in carcinoma of the larynx if the case is seen sufficiently early to make a removal by this method possible. It is striking that the local symptoms which brought the patient to me for examination were trivial—merely that his voice tired easily, and at that time there was nothing to suggest to him that there might be serious trouble in his throat.

In Irwin Moore's recent review of the subject (*JOURN. OF LARYNGOL., RHINOL., AND OTOL.*, May, 1918) I find that the complete removal of the arytenoid has been infrequent: no disadvantage was found to result in the present case.

HÆMORRHAGE FOLLOWING REMOVAL OF THE TONSILS, AND ITS TREATMENT.¹

BY IRWIN MOORE, M.B., C.M.

(Abstract.)

HÆMORRHAGE after removal of the tonsils has become more frequent of recent years. Though rarely fatal in comparison with the number of tonsils removed its results are sufficiently alarming, as the patient is frequently prostrated, and persistent anæmia lasting for years has been reported in a considerable number of cases.

Cases of hæmorrhage following removal of the tonsils are not

¹ From *The Practitioner*, April, 1918.

systematically reported—perhaps from the unwillingness of operators to record the occurrence. The hæmorrhage can be efficiently controlled by proper measures, such as compression or ligation.

The operation for excision of the tonsils is of great antiquity. Celsus (A.D. 10) was the first to describe the method of complete removal. Up to 1757 the tonsils were partially removed by hook or bistoury but from fear of hæmorrhage the operation became practically obsolete. From 1757 to 1827 the dread of hæmorrhage was ignored and partial removal by scissors or bistoury again was resorted to, but only the superfluous portion of the tonsil level with the pillar of the fauces was cut off.

The introduction of the guillotine by Physick in 1827 reduced the risk of hæmorrhage and gave fresh impetus to the operation. Improvements in technique have maintained the popularity of the guillotine.

In 1860 Borelli reviewed the method of enucleation with the finger.

William Hill advises that the term "tonsillotomy" should be reserved to signify incision into the tonsils, and points out that "tonsillectomy" signified partial or total extirpation by a cutting operation. In this article the terms "partial" or "total" tonsillectomy denote the complete or incomplete operation respectively.

With regard to statistics, Jonathan Wright collected 31 cases of alarming hæmorrhage occurring between 1868 and 1890; Harmon Smith reported 23 in his own practice occurring between 1890 and 1904. Out of this total of 54, there were fatal results in 6 cases.

Morell Mackenzie stated that serious hæmorrhages were rare in cases of partial tonsillectomy. Lennox Browne (1890) and Goodale (1913) expressed the same opinion.

Much divergence of opinion exists as to the relative frequency of hæmorrhage in partial or incomplete removal, and as to whether bleeding is more common after using blunt or sharp instruments.

Hunter-Mackenzie and McBride found that hæmorrhage was rare after partial tonsillectomy. Richards, who collected the opinions of seventy-seven operators in 1909, found that their statements as to the frequency of hæmorrhage varied from *nil* to 10 per cent.

Since the introduction of tonsillectomy during the last twenty years the records have been incomplete. Cocks and Dutrow consider that hæmorrhage frequently follows the complete operation, whereas Barnes and Tilley consider that hæmorrhage occurs less frequently after complete than after partial tonsillectomy.

Complete tonsillectomy with the blunt guillotine is advocated by Pybus, Whillis, Faulder, E. D. Davis and others. Luc and Whale are of opinion that complete tonsillectomy causes more dangerous hæmorrhage than does the partial operation. Hill and Elphick have described a method of hæmostatic enucleation by a specially devised guillotine. The majority of operators appear to agree that enucleation with the guillotine with blunt-bladed instruments is more satisfactory, and that hæmorrhage is more likely to occur after enucleation by dissection.

The principal sources of the hæmorrhage are the following: (1) The tonsillar artery or its branches. (2) The ascending pharyngeal. (3) A branch from the descending palatine. (4) A branch of the ascending palatine. (5) A branch of the dorsalis linguæ artery. (6) Capillary oozing from small vessels. (7) An enlarged venous plexus. (8) The internal carotid.

The anatomy of the region traversed by the tonsillar artery and its branches is fully described, and three illustrations are given (Figs. 1, 2 and 3). The "bleeding points" are carefully indicated in Fig. 1.

The pulsations of the *ascending pharyngeal artery* may occasionally be seen on inspection of the pharynx. Its course is described, and cases of pulsation of this artery reported by Conolly and Stuart-Low are referred to.

The position of the bleeding point of the *descending palatine branch* is indicated, and the place of its concealment under the angle formed by the junction of the faucial pillars is illustrated in one of the figures. The distribution of the *ascending palatine artery* is also described and illustrated.

The *internal carotid* lies well away from the tonsil, but its course is

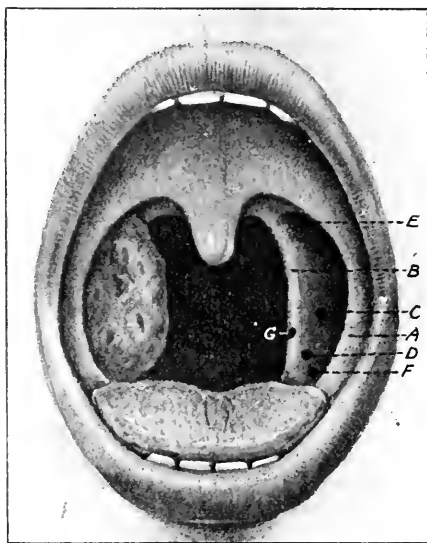


FIG. 1.—Shows position of the favourite bleeding points after tonsillectomy.

A. The anterior faucial pillar containing the ascending palatine branch of the facial artery. B. The posterior faucial pillar containing a branch from the descending palatine of the ascending pharyngeal artery. C. The tonsillar branch of the facial artery—one of the most common sites of hæmorrhage, *i. e.* the central portion of the tonsillar bed where this artery enters the tonsil. D. The tonsillar plexus of veins at the inferior portion of the bed. E. The tonsillar branch of the descending palatine branch of the ascending pharyngeal artery. F. Tonsillar branches of dorsalis linguae. G. Tonsillar branch direct off the ascending pharyngeal, or from its descending palatine branch. The plica is not shown in the drawing.

sometimes abnormal, and when this is the case it has occasionally been severed in operations on the tonsil. Harmer, Velpeau and Crockett have reported fatal cases of this kind. H. J. Davis, Dickie, Fisher and Brown Kelly have described abnormalities in the position of this artery.

The principal predisposing causes of the hæmorrhage are acute inflammation of the tonsils, anæmia and leukæmia, cardiac and renal diseases, the menstrual period and pregnancy, hæmophilia, purpura and

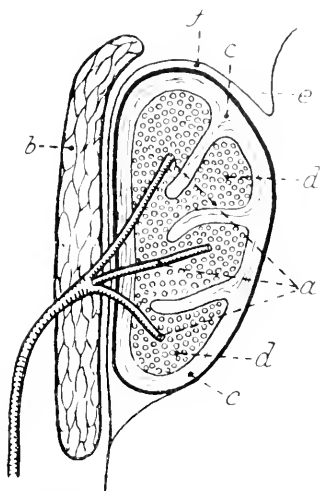


FIG. 2.—Diagrammatic illustration of one of the commonest sites of tonsil hæmorrhage, *i*, *e*, the middle of the fossa where the tonsillar branch of the facial artery pierces the superior constrictor muscle of the pharynx (after Ballenger). *a*, Subdivisions of the tonsillar artery. *b*, Superior constrictor muscle of the pharynx. *c*, Fibrous capsule of the tonsil. *d*, Lymph follicles or substance of the tonsil. *e*, Plica supratonsillaris. *f*, Supra tonsillar fossa.

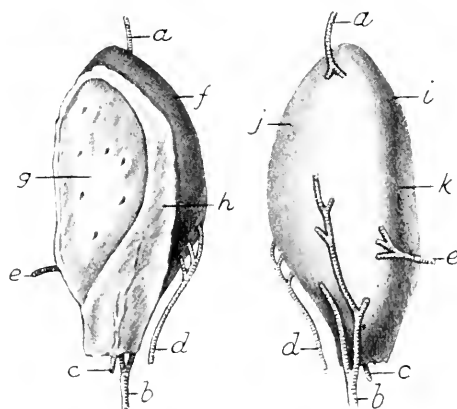


FIG. 3—The left tonsil, showing its arterial supply (after Fetterolf). *a*, Superior tonsillar branch from the descending palatine branch of the ascending pharyngeal artery. *b*, Inferior tonsillar branch from the dorsalis lingue; runs up middle of outer surface between capsule and outer wall. *c*, Antero-inferior tonsillar, or artery of the plica triangularis, branch of the dorsalis lingue. *d*, Postero-inferior tonsillar—the tonsillar artery—branch of the facial. *e*, Posterior tonsillar, a branch from the descending palatine of the ascending pharyngeal, and is severed during the separation of the tonsil from the posterior pillar. *f*, Capsule. *g*, Mesial surface. *h*, Annular plica. *i*, Posterior surface. *j*, Lateral surface. *k*, Groove for pharyngopalatine muscle.

malignant disease. The main exciting causes are traumatism from unskilled operations, exertion too soon after operation, coughing, vomiting, and the use of local anæsthesia.

If the predisposing and existing factors are borne in mind and each patient be carefully examined before operation, the occurrence of grave hæmorrhage may be avoided.

Where there is acute inflammation of the tonsils, operation should be deferred until the inflammatory stage is passed.

A careful look-out for cases of pernicious anæmia and leukaemia should be kept as the signs are not always in evidence. A fatal case of hæmorrhage following operation for removal of tonsils and adenoids has occurred in a child suffering from lymphatic leukemia.

A fatal case of hæmorrhage has also been reported in a patient suffering from albuminuric tonsillitis; the hæmorrhage was spontaneous.

In pernicious anæmia, acute leukaemia, cardiac disorder and kidney diseases operation should therefore be postponed.

It should not be performed during the menstrual period nor within a week of its onset, as many cases of hæmorrhage have occurred at this time. This is exemplified by a case in the author's experience—that of a girl, aged sixteen, whose tonsils were enucleated by a colleague. Four hours after the operation profuse oozing of arterial blood took place. Sponge compression failed to stop the hæmorrhage, which was only controlled, at the author's suggestion, by suture of the faucial pillars on both sides. The patient had begun to menstruate a few days before her time.

The danger of hæmorrhage being more common in adults than in children is proved by statistics: out of seventy-one cases only four or five were patients younger than ten years of age.

The operation is contra-indicated in hæmophilia and purpura. Great care should be taken to detect the hæmorrhagic diathesis, but it should be remembered that hæmophilia is very rare, and limited to the male sex. Sir William Osler's remarks on the diagnosis and detection of hæmophilia are quoted.

Pulsations due to abnormal position of arteries should be noted before operation is undertaken. Operated cases should be within reach of the operator as hæmorrhage may occur after as well as during the operation. William Hill has suggested, in a letter to the author, that the various hæmorrhages should be defined as (1) primary; (2) early secondary, reactionary or delayed; (3) recurrent secondary; (4) late or true secondary.

Preparations for the operation consist in the administration of a purgative two days previously, rest for twelve hours before operation, abstinence from smoking and alcohol for three or four days, and light diet for twenty-four hours.

The amount of bleeding at operation will depend on the skill of the operator and the technique he employs. The success of the operation will depend largely on the ability of the anæsthetist. A clear respiratory passage should be maintained, and the passage of blood into the larynx or stomach prevented. Deep chloroform anæsthesia increases the risk of reactionary or secondary hæmorrhage.

Various drugs are used in prophylactic treatment. It may be advisable to administer calcium lactate for three days before the

operation where quite moderate loss of blood is undesirable. Two 15-gr. doses obtain the greatest acceleration of coagulation; the effect may appear in three hours and last till the third day.

Adrenalin is unsuitable for prophylactic purposes, as it predisposes to secondary hæmorrhage. Pituitrin is valuable; its use reduces the loss of blood, and reduces the coagulation time of the blood by one-third or one-half; it also increases the strength of the heart-beat and reduces its frequency.

Subcutaneous injections of fresh blood-serum are valuable; horse-serum yields the best results, and coagulose, which is prepared from horse-serum, has been found useful as a prophylactic before operation on the throat.

Hæmorrhage occurring after the removal of one tonsil should be controlled by sponge-pressure or gauze swabs in the tonsillar bed before the other tonsil is touched, and the patient's head should be turned over to the side so that any blood in the pharynx may run out of the corner of the mouth. Ice or iced water is efficacious in controlling moderate bleeding. The patient should not be removed from the table till all bleeding points have stopped.

Reactionary hæmorrhage occurring after operations generally comes on three or six hours later. The most dangerous type is a slow, persistent oozing from the whole surface of the wound. A large clot may form in the bed left after the removal of the tonsil. This clotting must not be confused with normal clotting of blood in severed vessels. Hæmorrhage generally ceases after removal of the clot. The loss of blood from reactionary hæmorrhage may be great, and is often fatal, especially in young children. If hæmorrhage occurs from an artery, the vessel should be seized with a long-handled artery forceps and twisted or tied, or the forceps left in position. If the bleeding is general, firm pressure of a sponge in the tonsillar bed for ten or fifteen minutes is generally sufficient to stop the bleeding. The use of a clamp or hæmostat is not generally recommended, as it causes discomfort and sloughing.

Ice may be used as a hæmostatic, but it is less useful in secondary than in primary hæmorrhage. The hypodermic injection of morphia and atropine is useful in controlling restlessness and reduces the blood-pressure. Calcium lactate is not very efficacious; adrenalin is contra-indicated; pituitrin is useful in controlling urgent hæmorrhage.

Traumatic hæmorrhage in hæmophiles is said to have been arrested by horse-serum. Saline gelatine solution subcutaneously injected into the flanks or gluteal region reduces the coagulation time. In post-operative hæmorrhage hæmostatics should only be regarded as a useful adjunct to compression.

The encouragement of syncope as a means of stopping loss of blood is an unsurgical procedure.

Ligature of the common carotid artery has been advised in severe cases, but this method is not often successful, and is a serious measure to follow so simple an operation as removal of the tonsils.

Temporary suturing of the faucial pillars, formerly a difficult operation according to some authors, is rendered simple if the proper instruments be used under an anæsthetic. A half-circular needle is attached to a flat handle for this purpose (Fig. 4). One of the illustrations (Fig. 5) shows the needle (threaded with a catgut suture) passed through

the faucial pillars: also the method of securing and drawing the suture through the needle by means of a long hook. The ligature may be tied by introducing the fingers into the mouth, or by means of ringed forceps, which do away with the difficulty of the introduction of the fingers (Fig. 8).



FIG. 4.—Needle for suturing the faucial pillars. The same needle can be used for either side.

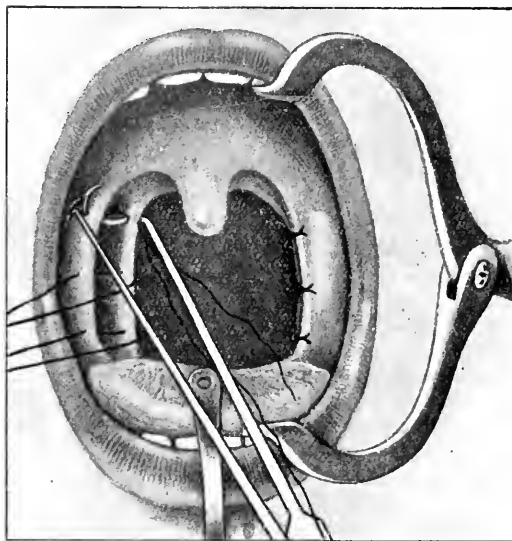


FIG. 5.—The arrest of hæmorrhage after removal of the tonsils by temporary suturing of the faucial pillars. Shows the needle (threaded with a catgut suture) passed through the faucial pillars, also the method of securing and drawing the suture through the needle by means of a long hook.



FIG. 6.—Ligature hook.

Many hæmorrhages are due to want of post-operative care. The patient should be kept in bed in the lateral position after operation. While recovering from the anæsthetic the patient should have a cork or bobbin placed between the teeth so as to keep the mouth open and prevent swallowing. Expectoration should be prevented. The child should not lie on its back, as the blood may trickle into the stomach, and in this way a large amount of blood may be lost. The nurse should be instructed to see that the child is not swallowing a large quantity of blood. Pulse failure may be restored by a rectal saline—a remedy,

however, that should be cautiously applied, as saline injections cause increased blood-pressure, which may reopen the vessels, unseal the clots, and renew the bleeding.



FIG. 7.—Forceps for tying the ligature.

The patient should be kept in bed twenty-four hours after the operation. Cold or iced drinks are best and only soft food allowed; all hot, hard or irritating food should be avoided. The mouth should be kept clean and the wound aseptic.

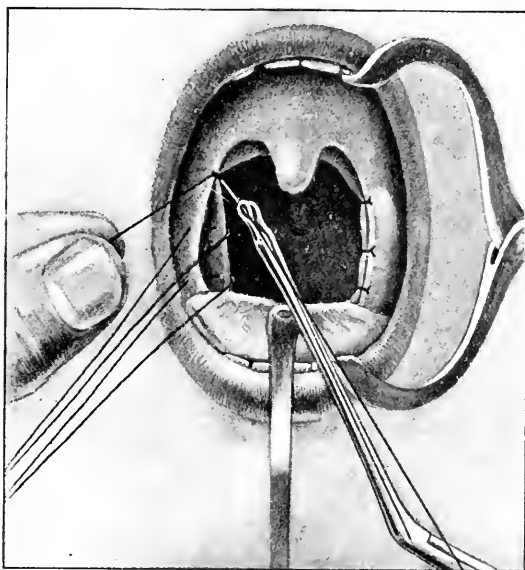


FIG. 8.—The arrest of hæmorrhage after removal of the tonsils by temporary suturing of the faucial pillars. Showing how the ligatures may be tied by means of forceps, so avoiding the difficulty of introducing the fingers into the mouth.

The amount of post-operative hæmorrhage without doubt depends on the technique of the operation and the skill or otherwise of the operator, but cases of troublesome hæmorrhage are liable to occur even when the operation is most skilfully performed.

The author describes a case of his own of severe hæmorrhage following complete enucleation of the tonsils in a delicate, anæmic boy, aged six.

Extensive bleeding, followed by vomiting of blood from the stomach, came on two hours after the operation following an attack of coughing. The right tonsillar fossa was found filled with a large clot disguising leakage behind. The clot was removed, sponge-pressure applied and morphine and atropine injected, and the bleeding then ceased. Recovery was slow.

Want of sufficient preparation before operation is one cause of bad hæmorrhage: and when hæmorrhage is profuse it is often allowed to go on with the idea that it will sooner or later spontaneously cease.

During the past five years the author has seen in consultation or had part treatment of seventeen cases of serious hæmorrhage following removal of tonsils: ten patients were adults (seven males and three females): seven were children (five males and two females). Three of the adults were treated by suturing the faucial pillars: in the remainder the hæmorrhage was stopped by clearing away clots from the tonsillar bed followed by continuous sponge-pressure and the hypodermic injection of morphia and atropine. There was no history of bleeding, nor could any special bleeding-points be found in any of the cases.

The early suturing of the faucial pillars is advocated in all cases in which sponge-pressure or ligature has failed to control bleeding, and before loss of blood has been sufficient to reduce the strength and damage the health of the patient.

The article is concluded by a copious list of references.

CLINICAL NOTE.

HÆMORRHAGE FOLLOWING THE OPENING OF A PERITONSILLAR ABSCESS.

By ARTHUR J. HUTCHISON.

SEVERE hæmorrhage following the opening of a quinsy must be rare. Most text-books on diseases of the throat and on surgery mention the possibility of its occurrence, but lay little stress on it. In my own practice I had never come across a case till last summer. I think, therefore, that this case ought to be recorded.

Miss L—, aged sixteen, got a sore throat on June 5. A swab taken from it proved negative to diphtheria, only torule and some micrococci being present. On the right side a quinsy developed and burst spontaneously, but after a few days re-formed, and, although it discharged a considerable quantity of pus and blood daily, remained swollen and extremely painful. When I was called to see the patient the second peritonsillar abscess had been present for about five days, and the discharge had been copious for two days. The patient was very ill, with an up-and-down septic temperature, poor pulse, thickly-coated tongue and very offensive breath, severe pain in the throat and neck, and such difficulty and pain on swallowing that she had taken but little nourishment for some days. There was the usual pain and difficulty in opening the mouth, but it could be opened sufficiently to enable one to get a view of the fauces. The right tonsil was pushed beyond the middle line, and there was a large, tense-looking swelling of the anterior pillar and soft palate, edematous uvula, and so on. Externally was a

large, tender swelling extending well down the neck. After feeling for a soft spot I opened the quinsy with a pair of StClair Thomson's forceps. A little pus came out as the forceps were introduced, but their withdrawal was immediately followed by a gush of blood, like the bleeding one occasionally gets when enucleating a tonsil. The patient, greatly alarmed, sat up and coughed and spat mouthfuls of blood over the bed and all around. I made her lie down, and, introducing my finger into the mouth, easily stopped the bleeding by quite gentle pressure on the incision. As soon as possible I replaced my finger, which the patient naturally could not help biting, by a swab on a long holder, and kept up the pressure for about twenty minutes. On removing it then, the bleeding had ceased. About three-quarters of an hour later the patient complained that her throat was swelling up inside, suddenly sat up in bed, and began to pour blood from the mouth again. I again applied a swab and stopped the hæmorrhage. After ten minutes of this pressure the hæmorrhage had again ceased. The question then arose as to what should be done to prevent a recurrence. Tying the carotid was ruled out by the septic condition of the neck; plugging the wound, of course, was quite impossible. The only practical plan seemed to be to have one of us or a nurse sit beside her ready to re-apply pressure if it should be required. As a matter of fact no further bleeding took place, but the patient gradually sank, and died of syncope during the night.

Whether, apart from the hæmorrhage, she would have died it is impossible to say. She was, as already stated, very ill and in a septic condition, but was not moribund before the hæmorrhage occurred.

What exactly happened when the forceps were introduced into the abscess, whether they directly tore a vessel, or whether a vessel, which had been nearly eroded by the suppuration, ruptured when the pressure was suddenly reduced, I had no means of determining. That the infection was a very virulent one was practically demonstrated on myself, for although at the time I could not find any break of surface on my finger, yet after about twenty-eight hours one spot which the teeth had indented began to itch, and next morning the lymphatics were red up to, and the glands swollen and tender in, the axilla.

SOCIETIES' PROCEEDINGS.

ROYAL SOCIETY OF MEDICINE—OTOLOGICAL SECTION.

April 19, 1918.

President: H. J. BANKS-DAVIS, M.B.

Aural Bacteræmia, with Illustrative Cases.—Richard Lake (see p.110 of the present issue). **CASE 1:** P. S.—, aged nine, with the following history: He was first seen on May 31, 1917. He had had earache in the left ear the previous summer after an operation for adenoids. Also an indefinite history of earache just before this. The present attack commenced at the end of January. The earache improved, and did not recur until May 25. When I first saw him his temperature was 100·8° F., and there was tenderness over the whole of the mastoid. The tympanic membrane was covered by desquamated epithelium, but there was no bulging of the drum nor any redness. The evening before operation the

temperature was 103° F. Cultures from the blood showed a free growth of staphylococci. The morning and evening temperature for the first four days after the operation varied from 99.6° F. in the morning to 101.8° F. in the evening. From the fifth day onwards he had no rise of temperature and did perfectly well.

CASE 2: *Example of a more Virulent Case.*—H. V. M——, aged seventeen, bugler, R.N., was discharged from the Service at the end of 1916, after suffering for six months from otitis media. He visited the War Pensions Committee two days before admission, and was referred to the Seamen's Hospital for treatment. When seen the patient looked extremely ill. The right ear was discharging thick pus, and there was tenderness over the mastoid. The temperature was 97° F., and the pulse 84. He was ordered urotropin, 10 gr., three times a day. His ear was washed out with a chlorine lotion, and he was given large quantities of fluid. On October 27, 1917, the blood-cultures showed a lively growth of streptococci. The radical mastoid operation was done on November 1. Two pints of saline solution *per diem* were injected, and on the following day he was given two million units of antistreptococcic vaccine. On November 3 the temperature was normal. There was nothing to report except that the pulse and temperature ran gradually up. The temperature went up to 101.3° F., and fluctuated, and the pulse 96. The pulse and temperature fluctuated, but the temperature was not again above 101° F., nor the pulse above 96. On November 13 septic granulations began to appear in the ear. On November 12 there was some facial paralysis, and on the following day the deep reflexes became sluggish. The next day the oculist described the right eye as having the disk margins completely obscured, and the left eye as nearly so, and he therefore considered that some cerebral complication was present. The wound was re-opened, granular tissue scraped away, and the dura mater of both fossae exposed, but the condition looked so normal that nothing further was done. The man gradually recovered, and has now left the hospital quite well. (Notes by Dr. Waine.)

CASE 3.—P. W——, aged fourteen. He was taken ill at the Royal Naval School, Greenwich, with profuse discharge from the right ear, and a temperature of 102.6° F. This high temperature persisted without intermission. There were no cerebral symptoms. There was slight pain at the back of the neck, but no muscular stiffness. Lumbar puncture showed that the cerebro-spinal fluid was clear, and there was no growth of bacteria in cultures. Blood-cultures showed a growth of streptococcus. He was given 10 c.c. of antistreptococcic serum. He was admitted into the Seamen's Hospital on December 21. He had suffered from middle-ear disease for the last eight years. On admission his temperature was 103° F., and his pulse 112, weak and irregular. There was a purulent discharge from the right ear, tenderness in the mastoid region, and clear mentality. He complained of pain in the neck on moving the head. A complete—not radical—mastoid operation was done. In this case the temperature became subnormal on the first day, rising to 101° F. on the second. The pulse-rate remained high. Antistreptococcic serum was given subcutaneously, and saline solution administered. The boy was slightly delirious. The saline was repeated. On December 25 there was an abscess under the right clavicle, and a pint of saline was given. By December 25 the mastoid wound was cleaned. Early in January he had an abscess in the left buttock—a most unusual symptom. No others were present. (Notes by Dr. E. J. Quick.)

Mr. MARK HOVELL: Major Richard J. Cowen had a patient with septicæmia, following parturition, temperature 104° F. He injected, subcutaneously, 5 c.c. of colloidal argentum, and the temperature in a very few hours fell to 99° F. Within the twenty-four hours he injected another 5 c.c. of the same drug; the temperature then fell to normal and remained so. A drug which will do this is worth knowing, and will be of use especially to general practitioners.

Dr. JOHNSON HORNE: It is necessary to bear in mind that even in the presence of suppurative disease of the ear the resulting growth, whether it be in the words of the author "a free growth of staphylococci" or "a lively growth of streptococci," may be due to one of many causes other than aural disease. The contingency of these other diseases must be eliminated before attacking the mastoid.

Dr. DAN MCKENZIE: The whole interest of the subject lies in the question of the diagnosis between bacteræmia and sinus thrombosis. I should say that some of the cases on which we operate for lateral sinus thrombosis without finding a thrombus in the sinus and in which the patient gets well have been cases of bacteræmia. It will always be difficult to decide when there is or is not a clot in the sinus because of the presence or absence of bacteræmia. Can we diagnose a simple bacteræmia from one in which there is sinus thrombosis? When a rigor is present one expects to find a thrombus in the sinus. But there are many cases of sinus thrombosis without rigors, especially in children. When there is any doubt, I should be inclined always to open the sinus to make sure, because I think it is the general experience that when a sinus has been opened the subsequent course is not jeopardized. My experience suggests that it may even be less dangerous to expose a lateral sinus and to explore it than to expose it accidentally and to leave it unopened. The danger of the accidental operative exposure of the sinus was first raised by Mr. Hunter Tod at the meeting of the American Surgeons in London in 1914, and my subsequent experience confirms his view.

Dr. WATSON-WILLIAMS: I agree with Dr. Dan McKenzie to this extent—viz. that if I thought there might be a commencing clot, I should open the lateral sinus, and should feel this course safer. I am not clear as to what was the operation referred to in Case 1. The result is interesting as supporting the value of anti-streptococcic serum. Failures are sometimes due to one's giving inadequate dosage. In a case of streptococcic infection I give at least 30 c.c. to 40 c.c. in the first twenty-four hours, and perhaps I give 20 c.c. the next day. I then stop, unless there are strong indications to go on. I have not injected it into the spinal fluid.

Mr. H. L. WHALE: I am surprised and interested to hear the view expressed as to opening the sinus. I have always thought and taught that of all the structures one encounters in operating on the lateral sinus, the dura is the most resistant, to clear away the bone being the paramount object; and when you get to the sinus you are safe, provided it is not opened.

Mr. MOLLISON: I have been unfortunate in blood-cultures, for only rarely have I been able to grow anything from blood specimens. It takes about three days to get cultures, and in that time one may lose the patient, unless active treatment has been instituted. It is difficult to decide between bacteræmia and pyæmia. I have seen cases in which the ear has eventually shown itself to be the cause of the disease, but the

first manifestation was secondary abscesses: the lateral sinus in one case subsequently became completely obliterated as a result of the disease.

MR. W. STUART-LOW: Discussion of this subject is important, as there is confusion in the minds of some practitioners. Introducing a new name does not help. The practitioner knows of septicæmia and pyæmia and sapremia. He seldom calls us in for septicæmia, waiting for something else to develop. If this paper should lead practitioners to call us in sooner I should welcome it, but I think it will only complicate matters. Certainly we are often consulted too late. There is always an idea of hanging on without operation, and that is encouraged by remedies being suggested, such as vaccines and urotropine. It is soothing to be told the temperature will go down, but meantime the patient is dangerously drifting. Urotropine has been much animadverted upon. It is wise to be sure there is no kidney or other disease before giving it. I have seen a number of cases in which vaccines have been used and pneumonia has subsequently developed, the patient remaining in a dangerous condition for some days. I have a shrewd idea that many of the cases which give trouble are those in which the throat has not been operated upon, and the focus there has acted deleteriously, prolonging convalescence.

MR. O'MALLEY: It is difficult to differentiate between bacteræmia, in which the blood gets infected by a focal nidus in the ear, and a pure sinus thrombosis the result of acute mastoid suppuration. Early last year I had a patient, a man, aged thirty-six, and the medical officer told me he complained of deafness and pain in one ear for three days: he was when seen complaining of tenderness over the mastoid. I found his membrane was definitely injected, but there was neither œdema nor pus. He was deaf on one side, and over his mastoid he was tender along the posterior border and also over the tip. The temperature was 104° F.; I could not ascertain any history of rigors. Sinus thrombosis seemed to be the only reasonable diagnosis: if there had been a rigor it would have pointed definitely to the need for operation. The medical officer demurred, saying that as the man had been abroad malaria should be thought of. A blood examination was made, but it was two or three days before a report was received. On the third day the temperature was 104° F., but there was still no pus in the ear, and apparently no further progress had been made in the local infection. By the fourth day we got a report that there were some pneumococci in the blood, and a smear from the throat revealed the same organism. The general conditions were improving, there was nothing wrong with the chest, and I concluded he got a pneumococcal infection through his ear into the blood. On the fifth day the temperature fell to normal and remained so; there was no subsequent suppuration. He had had no treatment except quinine on the malaria hypothesis. I congratulate myself on not having opened his mastoid. If in this case I had done so I should have attributed the improvement to that measure.

MR. C. E. WEST: The question of general infections is very difficult and wide. The infection varies, from a mere temporary blood invasion which may disappear before any culture can be made, to a pyæmic condition with multiple abscesses in the viscera. It is a mistake to attempt to differentiate these conditions by terminology, as this may suggest definite clinical entities which do not exist. To speak of them as blood infections or septicæmias or bacteræmias and mix all the cases together is the safest way. There is a type apparently the result of bacteræmia which I have seen once or twice, which was beautifully

developed in a recent case, a type not mentioned by Mr. Lake. I mean a non-suppurative local but distant infection, very much of the class of subacute rheumatism. I have seen it follow tonsillitis and acute invasions of the mastoid, and have seen it in connection with suppurating war wounds. These cases have a fluctuating temperature and sweats, and there may be pericarditis, tender, sometimes swollen, spots, often about joints or in connection with ligaments and tendons and periosteum. If the tender spots are on the scalp the patient cannot bear brushing of the hair. The most striking point in one such case was an inflammatory focus in the neighbourhood of the sciatic notch, with intense pain and tenderness along the course of the sciatic nerve. What used to be described as minor pyæmias are of great interest. It is a condition for which we should keep our eyes open, but about which we should not be unduly alarmed, for if they are hung on to they will get well. My specific is large doses of sodium salicylate or aspirin. The majority of patients will not welcome constant injections of saline, and if they can be got to take plenty of fluid by the mouth I think the result will be as good.

The PRESIDENT: With regard to some of the potent drugs recommended to be used to reduce organisms in the blood, it seems that they may do as much harm as the bacteria themselves. I have found that inoculating anti-streptococcal serum into the spinal theca has the best effect. Smaller doses can then be used, and its action is quicker than when introduced into the veins. Liquor ammoniæ prevents clotting in lateral sinus infections. I order three times a day five drops in water. I have mentioned it to several surgeons, who have used this for thromboses in varicose veins in legs and elsewhere. The effect of this solution, which is rapid in its results, impedes thrombosis, and to those who have not tried it I can strongly recommend it in these cases, added to which it is a strong circulatory stimulant, and benefits the patient in other ways.

Dr. WYLIE: In several cases similar to Mr. Lake's I have successfully injected into the vein 5 c.c. of 1 in 1000 dilution of perchloride of mercury. When suffering from streptococcal poisoning, swelling of the axillary glands and high temperature, I rapidly recovered after an injection of the solution.

Mr. MUSGRAVE WOODMAN (Birmingham): With regard to Dr. McKenzie's remark about exposing the lateral sinus, does he mean exposing the bony sinus or the dura mater? I have operated on many of these cases, and when in doubt I always slice off the bone until I expose the sinus, making a $\frac{1}{2}$ -in. opening. I never open the sinus itself unless it is obviously thrombosed, and I have not known bad effects to occur.

Dr. DAN MCKENZIE: The operative exposure of the lateral sinus, like that described by Mr. Woodman, is harmless in most cases, but there are a certain proportion in which sinus thrombosis follows in eight to ten days. When a sinus has been exposed I am anxious about the case until the tenth day. And when, under such circumstances, I have had to open the sinus, I have been certain that exposure at the time of operation had infected the sinus. Consequently, I have almost decided it is safer to open and expose the sinus. Risk of thrombosis occurring after operation is less when the sinus, if exposed by disease, is covered with granulations.

Dr. KELSON: The fallacy of confusing *post* with *propter hoc* is most

common in these cases. Remedies such as those mentioned should not be accepted upon the experience of a few cases. Many cases recover by themselves.

Mr. SOMERVILLE HASTINGS: In cases of doubt it is wise to open the lateral sinus groove. I have never regretted doing it, but deplored omitting to do it. It is a very important matter, especially in children, because it is often difficult to know whether there are granulations on the lateral sinus. I always open the lateral sinus groove, and freely expose the sinus in doubtful cases. I am surprised to hear of Dr. Dan McKenzie's experience.

Mr. LAKE (in reply): I felt interested in the remark about collosol argentum; I have desired to try it but have never done so. The question of the exposure of the sinus must be left to the individual surgeon. My position is that I would not open a sinus unless I saw a good reason for doing so. The diagnosis of pyæmia and bacteræmia is difficult: I can draw no hard-and-fast line. Sinus pyæmia has been so often discussed that I did not wish to introduce it on this occasion. I do not regard urotropine as a specific, and it must be used with due precautions.

Recurrent Herpes of Auricle.—H. J. Banks-Davis (President).—The patient is a boy, aged nine. Ever since the age of four he has had attacks of herpes regularly once a year: "he feels ill and is feverish," and has an aural eczematous discharge. The attack lasts two weeks and is always unilateral, affecting the right ear alone. He was sent to my department by Dr. Pernet. There was no glandular enlargement.

Mr. H. L. WHALE: Was there dental caries, or any other cause of irritation of the fifth nerve?

Dr. DAN MCKENZIE: Dermatitis herpetiformis must be remembered: it is like herpes, but recurs in the same place. I have seen it return three or four times.

The PRESIDENT (in reply): We could find no cause of irritation. Dr. Pernet sent the case to me. The patient had a discharge from the ear, which was eczematous. Dr. Pernet made the diagnosis given in the title: he had had him under care some time. Vesicles were present on the back of the auricle as well as on the front.

(To be continued.)

ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

November 2, 1917.

President: Dr. A. BROWN KELLY.

PRESIDENT'S ADDRESS.

(Abstract.)

(The PRESIDENT, having pointed out that it was a fitting time to consider whether the Section was furthering in the best possible manner the progress of laryngology, proceeding to discuss its present and possible future relations to investigation, teaching and publication, said:)

First, with reference to original investigation, I should like to impress

upon the younger members of the Section that for the solution of the more purely scientific questions we are mainly dependent on them. If they are still in touch with the anatomical, physiological or pathological department of their medical schools, they can obtain material and opportunities for research work.

The problems to be solved are innumerable. In the anatomical department the following subjects might be studied: The innervation of the soft palate and the causes and effects of paresis of its individual muscles; the histology of the olfactory region with reference to the changes causing anosmia, including if possible the transitory type, which is a feature of vasomotor rhinitis; a comprehensive description of the anatomical variations met with in the upper air-tract: this last might serve as the basis of a useful chapter in all text-books on diseases of the nose and throat.

In the physiological laboratory work might be done towards the elucidation of the functions of the inferior turbinate, and its variations in bulk and secretory activity. An instrument indicating the amount of air passing through each nasal fossa is still a desideratum. We know that nasal hypersecretion is sometimes checked by calcium salts, but we are still unable to identify the cases in which these drugs are likely to prove useful. Information on such points would help to raise the treatment of the so-called nasal catarrh from the region of empiricism to that of scientific exactitude. The whole subject of vasomotor instability is a mystery, the unravelling of which, however, is unlikely in our present state of knowledge. It is not improbable that vagotonia may account for at least some of the nasal neuroses. Every day we are questioned as to the use of tonsils and adenoids and the cause of their enlargement; and often we have reason to ask ourselves why the removal of a comparatively small mass of adenoids is followed by a physical and mental transformation quite out of proportion to the improvement in the respiratory conditions. Did the adenoids set free a deleterious internal secretion, or inhibit a beneficial one? or, how else are we to explain the great change? All these questions suggest matter for investigation.

We are still in need of *post-mortem* examinations of the central nervous system in neuroses affecting the larynx alone or in association with other regions.

In poor-law hospitals and asylums permission might be obtained whereby laryngological and other cases of special interest could be observed throughout life and the morbid tissues examined subsequently.

Of the relations of diseases of the eye to those of the nose much has been written in recent years, but more information on the subject is required.

Lastly, to any member with opportunities of seeing diseases of the skin, I might mention that we are still in want of an account of the dermatoses as they affect the mucous membranes of the mouth and throat.

In any of these directions a young medical man with limited clinical material could make valuable contributions to our specialty, and as an incentive to research work the Section might announce that applications for membership accompanied by a thesis would receive special consideration.

An increased production of original papers would allow of the enlargement and improvement of the JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY.

Having indicated some lines along which investigations may be pursued, let us consider whether the Section gives adequate encouragement to work of this kind.

At present all communications made to this Section must be based upon a patient, specimen or exhibit of some kind, with the result that those living at a distance from London, and therefore almost precluded from showing cases, are unable to contribute to the most interesting part of the proceedings.

According to an unwritten law of the Section notes for the agenda-paper must be as brief as possible. Most of the old members will agree with me in ascribing the success of this Section largely to the practical policy insisted upon in the past. I regret to have to point out, however, that this very conciseness has been seriously detrimental to the study and progress of laryngology in this country. Many of the rare and interesting cases that have been brought before the Section should have formed the basis of extensive investigations, or of analyses of all previously recorded cases of the same nature.

These considerations make it obvious that this Section, although it has attained a high measure of success in relation to practical laryngology, might benefit further by encouraging original investigation, and by gathering to itself some of the work done in the provinces and colonies and abroad. But how are these objects to be accomplished without damaging established and proved usages? Any proposal to have papers read at the meetings would, I am sure, be at once negated by the majority of the members.

Two ways of settling the difficulty suggest themselves. First, a member desirous of bringing a paper before the Section might submit it to the Council: if approved, it would be printed and sent to the members with the programme of the next meeting; the title only, or, at most, the conclusions, would appear on the agenda paper: at the meeting, the subject, in turn, would come up for discussion, and the paper would afterwards be published in the *Proceedings*.

The second method would be once a year to devote an entire day—say the first Friday in May—to the work of the Section. In the forenoon, papers which had previously been printed and circulated amongst the members would be discussed; in the early afternoon the museum and display of instruments would be inspected; later, the Annual Business Meeting would be held, followed by an ordinary meeting with the exhibition of cases, etc., and in the evening the dinner of the Section would take place. A laryngological gathering such as this would prove an attraction not only to provincial members but also to our foreign *confères*; it might even serve as an international congress of rhino-laryngology.

If the Otological Section resolved to institute a similar annual reunion the meetings of the two Sections might be held on successive days.

Laryngologists with whom I have spoken on the subject have all expressed the opinion that the teaching of our specialty should now be improved and extended. Consideration of the matter and necessary action lie, of course, with the individual centres or schools. Our young graduates and those of our allies will have no wish to study, as has been the fashion, at the birthplace and early homes of laryngology: their needs, however, can be amply provided for in London. The metropolitan members of the Section whom these matters directly concern might find

it suitable to take their initial steps here. If a great scheme of instruction is elaborated for London, might I suggest that the students be sent occasionally on a provincial tour?

I trust that at an early date the question of granting a diploma in laryngology will be raised. A qualification of this kind would be a stimulus to teachers and to the more exact study of the subject, besides affording a ready means of distinguishing the trained from the self-styled specialist.

The last matter of which I would ask your consideration is the production of a comprehensive and advanced treatise on the diseases of the upper air- and food-passages. Several members of the Section have written on the subject books of which we may be justly proud, for they are unequalled by publications of like aims and scope in any language. The work which I foreshadow is, however, quite beyond the productive power of any one man, and could be evolved only as the result of the experience and industry of many. If, as we trust, our language is to be that of the future, it is incumbent upon English-speaking laryngologists to plan and carry out such a work. In these circumstances would it not be fitting that the Section undertake its supervision and accept the monetary responsibility?

I shall conclude my remarks by emphasising their twofold aim. I have tried to show that this Section of a great Society, in addition to its functions at home, has certain imperial and international obligations, one of the first of which is to open its portals to our overseas and foreign brother specialists and to extend a welcome to their work, also that it can profoundly influence the destinies of laryngology in this country by fostering research, organising teaching, and subsidising approved publications—in short, by becoming the *alma mater* of laryngology.

Fusiform Dilatation of the Œsophagus, coated with *Oëlium albicans*, in a Girl, aged fifteen, and apparently Idiopathic.—**Sir StClair Thomson.**—W. R.—, aged fifteen, was admitted to Lister Ward, King's College Hospital, on April 21, 1917, with a suspicion of an œsophageal pouch. Symptoms started one year previously with violent fits of coughing and regurgitation of food. She had no difficulty in swallowing and ate anything, but shortly after each meal food was regurgitated into her mouth. Condition varied: for fourteen days she might have little or no difficulty in retaining everything, and then for days she might be unable to get any food down, as regurgitation followed fast on every effort to swallow. It was rare for food to be regurgitated which had been swallowed on the previous day. No blood. Discomfort referred to middle of sternum. No loss of weight or strength, and patient is particularly vigorous, well grown and intelligent. Patient has had every single tooth in her upper jaw removed, as it was thought that her trouble was due to pyorrhœa.

Present condition: On ordinary examination there is nothing to be detected. Examination on the screen shows that a bismuth feed passes freely to the middle of the œsophagus, where it is held up for a short time. Plate examination shows a definite obstruction at cardiac end of œsophagus, with considerable dilatation above the obstruction, and some irregularity of the shadow about the middle of the œsophagus. Œsophagoscopy is particularly easy, and shows an evenly and widely dilated, fusiform gullet, irregularly coated with extremely adherent plaques of dirty white material, like curdled milk. On removal, this

material was reported to consist of a mass of *Oidium albicans* with other bacteria. No pus, blood, or fragment of growth.

A series of lavages, including peroxide and eusol, were carried out in May, and the patient was relieved. She has again come under treatment, and remains much *in statu quo*.

The PRESIDENT: As Sir StClair Thomson has put this case down as fusiform dilatation, and has not used the terms "achalasia," "cardiospasm," or "atony of walls," we should, in the discussion, keep to the clinical side. I hope that in the course of the Session cases of this class will be specially considered some afternoon, when members will have an opportunity of expressing opinions as to the aetiology.

Prof. SHATTOCK: The whole interest of this case lies in the fact that the interior of the œsophagus is coated with oïdium. The subject of œsophagectasis was so fully discussed last year, in the Medical Section, that I hardly think it can be necessary to go into the matter again now.

Sir STCLAIR THOMSON: I shall be glad to leave out what might complicate the discussion as to why the œsophagus is dilated, whether it is the consequence or the cause of the *Oidium albicans*. But the comfort of the patient is a consideration, and this patient has come up twice from Southampton to be cured, and I have failed! Therefore I shall welcome any suggestions. A physician suggested that the oïdium occurs in the mouth when there is an excess of alkalinity. Therefore we washed out this case with dilute hydrochloric acid, and we have used boric acid, peroxide, and painted it with nitrate of silver. She has had the condition since April.

Dr. DAN MCKENZIE: I should be inclined to see what would be the effect of a piecemeal removal of the accessible part of the fungus, followed by a rubbing in of some such substance as tincture of iodine. I have seen such a condition in the pharynx of adults not infrequently, but usually in persons who were dying. In them one noticed that it produced a peculiar interference with swallowing. It was obvious that the growth had made its way amongst the muscular fibres in the neighbourhood, producing, no doubt, an interference with muscular movement. The dysphagia in this case may be of that nature.

Mr. MARK HOVELL: I have never seen a case similar to this one. I think a remedy of a penetrating nature is required. For that reason I would try collosol iodine, or collosol silver, or collosol copper, locally. Collosol iodine and collosol argentum is made up in suppositories, and these could be passed down to and lodged in the œsophagus, and being non-toxic are quite harmless; 2 to 4 drms. by the mouth is a dose. If that did not succeed, I should try a germicide solution, such as cyllin.

Mr. HERBERT TILLEY: Before trying ionisation, I should advise the free application of a weak solution of sulphurous acid: it seems very effective in the destruction of various forms of "mould."

The PRESIDENT: Do members think the two conditions here are related—that is, is not the oïdium accidental? I have met with the oïdium in the gullet on several occasions, but not always associated with fusiform dilatation. I would be inclined to treat the fusiform dilatation first and see whether the oïdium did not afterwards disappear. The treatment I have employed for the underlying affection, the so-called cardiospasm, has been dilatation of the cardiac end of the gullet. This has occasionally effected striking benefit, patients who were practically invalids having been restored to perfect health, and others having been improved for six months, or a year, when the dilatation had to be repeated;

only in a few cases has no improvement been obtained. The instrument used was Gottstein's dilator, the bag of which is distended by pumping in water. Other dilators are on the market—*e.g.* Brünings' and Plummer's.

Dr. JOHNSON HORNE: We have got somewhat off the line in attaching so much importance to the oidium and so little to the stricture. Does Mr. Shattock consider the oidium a causative factor, or is it merely a coincidence?

Prof. SHATTOCK: I entirely agree with the President that the growth of the oidium or *Blastomyces albicans* is a pure epiphenomenon: that it is not causally connected with the dilatation of the œsophagus. It occurs, probably, from some accidental infection having taken place in a passively dilated tube. As to the depth to which growth penetrates, I must protest against assuming that in this case it penetrates into the muscular wall of the œsophagus. I believe the growth is confined to the mucosa, and dilatation of the cardiac orifice would probably cure the infection. The fungi of proper blastomycotic granulomata belong to a different species from that of common thrush.

Sir STCLAIR THOMSON (in reply): I agree the case might form the basis for a much larger discussion. I do not know what to dilate, because although the cardiac end of the œsophagus will not let food through, yet there is no obstruction. You have seen how the patient can herself pass a feeding-tube. We cannot get forward with the treatment until we are agreed as to the pathology. Is this a spasm of the cardiac end, or atony of the œsophageal muscles. Am I to dilate the cardiac orifice, or stimulate the constrictor peristaltic muscles? I will try to do both, and report.

(*To be continued.*)

ROYAL SOCIETY OF MEDICINE: SECTION OF LARYNGOLOGY.

SUMMER CONGRESS, FRIDAY, MAY 2, 1919.

THIS meeting, which is the first Summer Congress of the Section, will take place at the House of the Royal Society of Medicine, 1, Wimpole Street, London, W.1. The following programme has been arranged:

The mornings of Friday, May 2, from 10 a.m. till 1 p.m., and of Saturday, May 3, from 10 a.m., will be devoted to the reading of papers and to their discussion. The following papers have been accepted.

P. WATSON-WILLIAMS.—“Latent Sinusitis in relation to Systemic Infections.”

C. H. HAYTON.—“A Contribution to the Treatment of Atrophic Rhinitis with Ozæna, based on an Altation in Reaction of the Substrate in which the Bacterial Ferments are Acting.”

A. BROWN-KELLY.—“Spasm at the Entrance to the Œsophagus.”

DAN MCKENZIE.—“An Operation for the Complete Removal of the Soft Palate (Staphylectomy).”

D. R. PATERSON.—“A Clinical Form of Dysphagia.”

J. F. O'MALLEY.—“Gunshot Wounds of the Nasal Accessory Sinuses.”

IRWIN MOORE.—“The Treatment of Enlarged Tonsils in Cases where Operation is Contra-indicated.”

W. H. KELSON.—“Pharyngeal Diverticula, with Notes of Two Cases,

in one of which the Pouch was removed under Local, in the other under General Anaesthesia."

W. S. SYME.—"A Series of Cases of Maxillary Antral Disease. Some points of interest."

Readers of papers are requested to send in abstracts of their papers without delay to the Hon. Secretaries for publication in the *Proceedings* of the Section. It is hoped to publish the papers *in extenso* in the JOURNAL OF LARYNGOLOGY.

On Friday afternoon, from 2.30 p.m. till 4 p.m. a series of demonstrations will be given, including one by Dr. W. Hill on "Radium in Oesophageal Disease," and one on "Rhinoplasty," by Messrs. Gillies and Hett.

A museum of interesting specimens, etc., is being organised.

The ordinary Clinical Meeting of the Section will follow the demonstrations, commencing at 4 p.m.

In the evening at 7.45 p.m. the Section Dinner will be held at the Café Royal, and as this will be the first social gathering since the outbreak of the War a large assembly of members and friends is expected.

All communications regarding the Congress and the Dinner should be made to the Hon. Secretaries of the Section: Mr. F. A. Rose, 68, Wimpole Street, London, W. 1., or Dr. Irwin Moore, 30A, Wimpole Street, London, W. 1.

Abstracts.

PHARYNX.

The Lingual Tonsil: General Consideration and its Neglect.—Herman B. Cohen. "The Laryngoscope," September, 1917, p. 691.

The number of nodules in the lingual tonsil averages sixty-six. The size varies from one-half to six millimetres. They rest on a basement-membrane of fibrous tissue analogous to the capsule of the faucial tonsils. The lymphatic drainage empties into the suprahyoid glands and the submaxillary and deep cervical glands. The two portions of the tongue (anterior and posterior) have different origins, the sulcus terminalis being taken as the division between the oroglossus and the pharyngo-glossus. The part behind the pharyngo-glossus contains the lingual tonsil. The anterior portion differs completely from the posterior portion anatomically, physiologically and pathologically. The lingual tonsil is the last to undergo atrophy.

The diseases of the lingual tonsil are similar to those of the faucial tonsil, but are usually milder.

Superficial varices only make their appearance when the deep varices have acquired a certain development. The trunk of the lingual nerve, the seat of glossodynia, is accompanied by a satellite vein. All neuroses in this situation may be attributed to superficial and deep varices. A constitutional or acquired debility of the vasomotor system is the chief cause. Some cases occur at the menopause. Other ætiological factors are constipation, hepatic cirrhosis, and chronic intestinal disturbance. The symptoms are cough, "foreign-body" sensation, paræsthesia, voice-changes, hæmorrhage and respiratory distress, constant pain at the root of the tongue, pain on swallowing referred to the base of the tongue and

region of the hyoid bone. The neurotic element is highly demonstrated in those individuals. Globus hystericus is frequently due to some lesion of the lingual tonsil. Casadesus reported a case of nocturnal asthma cured by the cautery applied to the lingual tonsil. The barking cough of puberty is a frequent occurrence due to slight enlargement of this tonsil. This constant, irritating cough is sufficient to cause impairment of health, and give the patient great mental anxiety from his belief that he has tuberculosis. Twenty-five per cent. of the pathological changes in the lingual tonsil occur in professional voice-users. Marked hyperplasia occurs in middle or adult life, but is seldom seen in children. It is more common in the female. Varicose conditions have been found to be more common in the male sex. In pregnancy, where the persistent cough cannot be explained, it would be well to always look for hypertrophy of the lingual tonsil.

Treatment.—General treatment consists in the removal of alcohol, tobacco, and irritating or hot foods. For varix silver nitrate, from 12½ to 25 per cent. This drug or the cautery should be tried in slight hypertrophic conditions. A mixture which Cohen uses is tincture of iodine (one drachm to the ounce of glycerotannin). After a course of treatment two or three times weekly, with little or no improvement, we should consider operative measures. A large pair of curved scissors may be used, but Cohen prefers the lingual tonsillotome; for varicose conditions the galvano-cautery. For after-treatment massage the wound with a cotton applicator dipped in a mixture of equal parts of glycerin, tincture of iodine and tincture of perchloride of iron at intervals of twenty-four hours.

Cohen described several cases: *e. g.* a male, aged thirty-two, had an attack of tonsillitis ten days before Cohen saw him. He was directed to use gargles, but received no benefit from their use. He began to have painful dysphagia. The condition annoyed him so much that he was tempted to end his life. Examination revealed a swollen posterior portion of the tongue, diseased tonsils and œdema of the epiglottis. Under cocaine anaesthesia Cohen made several scarifications in the glosso-epiglottic space followed by a deep incision of the left lingual tonsil. Pus at once oozed out. Recovery.

In 3000 dispensary cases 55 showed abnormal conditions of the lingual tonsil. Thirty-seven were females and 18 were males. Twenty-two per cent. were under 20 years of age, 29 per cent. between 20 and 30, and 49 per cent. were 30 and above.

J. S. Fraser.

Foreign Body (a Living Fish) in the Pharynx.—Moh. Zaky Shafei.

"The Practitioner," vol. ci, p. 348.

The patient was a young fellah, aged eight, who was fishing in the Nile. Having caught a small trout, he carried it between his teeth. It glided into his pharynx and asphyxiated him. When seen by the reporter half an hour later he was unconscious, cyanosed, and breathing with great difficulty. The mouth was gagged open and an unsuccessful attempt made to dislodge the fish. It was, however, removed after several other attempts, apparently losing its tail in the process. The boy was unconscious for forty-five minutes, requiring artificial respiration, strychnine injections, and other restoratives. Nothing is said as to the fate of the fish, which was a Nile trout 6 in. long and 3 in. broad at its widest part.

MacLeod Yearsley.

NOSE.

The Treatment of Suppuration of the Nasal Sinuses.—E. B. Gleason. "The Laryngoscope," January, 1918, p. 1.

Till about four years ago Gleason leaned toward the teutonic opinion that the only adequate treatment of suppuration in the nasal accessory sinuses was complete exenteration by radical operation. Since that time he has gradually recognised that a number of untoward results follow such radical procedures as the Killian frontal operation. The nasal discharge was not cured but only modified; the headaches were lessened, but replaced by disagreeable sensations. Similar unsatisfactory results may follow Ballenger's operation on the ethmoid. Gleason holds that radical operations on the accessory sinuses are justifiable in only a very limited number of cases, and even then only after every other method has failed to yield even fairly satisfactory results. Gleason advocates the use of the suction apparatus after an application of 2 per cent. cocaine in the region of the ostia. After the secretion has been removed Gleason injects 10 per cent. argyrol into the sinuses by means of a hypodermic syringe with a long nozzle. The suction apparatus should be provided with a vacuum gauge, as a negative pressure within the nose of more than 20 inches of mercury is often painful and usually causes hæmorrhage. Gleason's apparatus acts not only by withdrawing the secretion but also by producing hyperemia. The patient must breathe through the mouth during the time the instrument is being used. MacWhinnie has described the action of the suction apparatus as that of a "combination vacuum cleaner and Bier's congestion apparatus." The instrument may also be used as an aid to diagnosis by replacing the more lengthy posture test. Gleason has been favourably impressed with the results obtained from his apparatus in preventing (1) the recurrence of nasal polypi and (2) the formation of crusts in ozæna.

J. S. Fraser.

LARYNX.

Treatment of Laryngeal Tuberculosis.—C. Caldera. "Bol. d. Prof. Grazzi," xxxvi, p. 1.

Tuberculosis of the larynx must be regarded as one of the graver lesions of the tubercle bacillus, as the organ is of capital importance in the vital functions. One of the earliest symptoms is dysphonia, followed sooner or later by aphonia, and often accompanied by pain, which is either spontaneous or induced by movements of swallowing.

As a result of numerous observations the writer has come to the conclusion that laryngeal tuberculosis is not difficult to cure. It can be overcome much better than the closed forms of tuberculosis.

No one method of treatment is reliable in all cases. In cases where the patient is certainly going to die of pulmonary tuberculosis probably absolute silence and the application of analgesic medicaments are enough, as more vigorous forms of treatment would uselessly increase the sufferings of the patient and lower his resistance. To produce analgesia insufflations of antipyrin, cocaine, orthoform or anæsthesin are useful. Injection of the superior laryngeal nerves with alcohol gives considerable relief.

If, on the other hand, the patient is in good condition, more energetic forms of treatment are indicated. For lightly infiltrated forms, silence, sun therapy, painting larynx with antiseptics (tachiolol) are recommended.

When the infiltration is more marked and accompanied by œdema, and more especially if there is ulceration, the galvano-cautery is the method of choice. When the infiltration is extensive deep streaks must be made with the cautery. Ulcers must be cauterised to complete carbonisation of the tissues. If possible the cartilages should not be touched. If the cauterisation is deep the reaction is minimal, but if superficial there is a severe reaction afterwards. If the ventricle is affected it must be freely opened up by a transverse cut across the false cord with either a cautery point or a hooked knife. In vegetative forms the cautery is not to be recommended as it causes too much destruction. The growth should be removed with forceps.

It is of course very important that general therapeutic measures should be carried out along with whatever local treatment is indicated.

J. K. Milne Dickie.

THYROID GLAND.

The Thyroid and Internal Secretions.—**J. C. Verco.** "Medical Journal of Australia," December 2, 1916.

Under what Verco styles "a romance of medicine," he gives the history of how a number of different workers made observations on the relation of the thyroid gland to the animal economy. In 1850 Curling reported two cases of "absence of the thyroid body connected with defective cerebral development." Twenty-one years later Hilton Fagg cited cases, like Curling's, of mental and physical dwarfs with absence of their thyroids. Galt, Ord and Greenfield carried our knowledge a little further. In 1882 Kocher, who had removed numerous goitres, described a condition, which he named *cachexia strumipriva*, which followed on the removal of the goitre. This condition he attributed, not to the absence of the thyroid which he had taken away, but to injuries of important nervous structures in the neck unintentionally inflicted during the operation. Felix Semon at this time drew an able generalisation. He believed that *cachexia strumipriva* and *myxœdema* are one and the same disease—that *cretinism* is an analogous condition, and the cause the absence of the thyroid gland or loss of its function. His theories were put to the test by Victor Horsley, who, by a series of experiments on monkeys and other animals, proved that Kocher's *cachexia strumipriva* was due to loss of the thyroid, and not to injuries to other structures in the neck—that this and *myxœdema* are one and the same disease. *Cretinism* is *myxœdema* in early life. Horsley also suggested a remedy—the grafting of a thyroid in the tissues of an animal which had been deprived of it. The steps onward to the present method of thyroid feeding are detailed.

A. J. Brady.

TRACHEA.

Fibroma of the Trachea.—**J. B. Horgan.** "British Medical Journal," December 14, 1918.

A boy, aged nine, previously robust, had an attack of measles three months ago, and since then had suffered from dyspnoea at irregular intervals. When seen by the writer there was orthopnoea, cyanosis and inspiratory stridor.

No breath-sounds were audible in either lung, but there was a loud vibratory sound over the upper sternal region. Direct examination

showed a normal pharynx and larynx, but a dusky-red globular tumour was visible, low down in the trachea.

As immediate relief was necessary, low tracheotomy was performed under local anaesthesia, but the obstruction was found to lie beyond the reach of the tracheotomy tube. Accordingly, by means of Luc's nasal forceps passed down through the wound the tumour was grasped and removed, when easy breathing was at once restored.

Five days later, examination by lower tracheoscopy showed that the site of origin of the growth was the anterior tracheal wall just above the bifurcation. This was cauterised, and the patient made a good recovery.

The tumour was a hard, bilobed, pediculated mass of fibrous tissue. Had it occupied the trachea alone it would have blocked the lumen, but it doubtless lay astride the bifurcation and extended into each bronchus.

The site in this case was unusual: the majority of tracheal growths originate in the posterior wall.

According to StClair Thomson, 50 per cent. of tracheal tumours are malignant, and of benign tumours papilloma occur more frequently than fibroma. The growths arise as a rule from the posterior wall, and their frequency diminishes as the tube descends. The present writer does not share this view, but finds, from an investigation of recorded cases, that the subglottic is the region most commonly affected, the lower end comes second in frequency, whilst the intervening area is least liable to tumour growth.

A good list of references accompanies this paper.

Douglas Guthrie.

EAR.

Epithelioma of the Middle Ear.—F. A. Burton. "The Laryngoscope," October, 1917, p. 755.

Malignancy of the middle ear is extremely rare. Less than fifty cases have been reported. One case was diagnosed microscopically as cancer but was rapidly cured by mercurial treatment. In most instances the diagnosis was only made after operation. Out of sixteen cases collected by one observer eleven had been preceded by otorrhœa of long standing. Very few instances of metastatic tumours have been reported when the ear was the primary focus of disease. Burton suggests that in all cases of chronic otorrhœa which occur in patients after middle life and in which the growth shows a tendency to recur, a microscopical examination should be made. It is only by early diagnosis that it is possible to extirpate the growth.

Burton records the following case: Female, aged forty-three, complained of pain and aural discharge with very offensive odour of five years' duration. There was no vertigo or spontaneous nystagmus. Weber lateralised to the affected ear. For six months the patient had noticed slight impairment in the movement of the jaw and face muscles. The external meatus was filled with a polypoid growth which bled excessively, and there was slight pain on pressure over the mastoid. The polypi were removed with a cold snare and the bleeding was controlled by packing. In a few days the canal refilled with polypi. The probe now revealed loss of the posterior wall of the bony canal and the pathologist reported epithelioma. X-ray treatment gave relief from pain for a short time only. Two months later the pain was extremely severe and

there was a discharge of pus through a fistula over the mastoid. Operation showed a thin shell of bone covering the cancerous tumour in the mastoid. The wound was left open. This operation gave great relief. Later abscesses formed in the neck, two of which were opened externally and one through the mouth. There was also complete right facial paralysis, paralysis of the right vocal cord and great difficulty in swallowing. By this time the hearing in the right ear had completely gone. The lymphatic glands, however, did not become enlarged. The patient became very emaciated and death occurred eight months after her first visit. A limited autopsy showed that most of the temporal bone had gone. There were no meninges over the adjacent cerebellum, which was macerated. The semi-fluid tumour extended upward to the tentorium and down into the sheaths of the cervical muscles and vessels. Pus burrowed in every direction. The tumour communicated with the nasopharynx by way of a patulous Eustachian tube. *J. S. Fraser.*

MISCELLANEOUS.

Vincent's Angina.—**Thomas Hubbard.** "The Laryngoscope," November, 1917.

Hubbard thinks that a large number of cases are not diagnosed. Laboratory study of all ulcers and false membranes is necessary to positively timely diagnosis. The experienced laboratory worker can differentiate between the *Spirillum buccalis*, the *S. dentium* and the *S. pallida* by dark field illumination. The disease process may invade the nasopharynx or hypopharynx and larynx and also the œsophagus. Some cases so resemble diphtheria that one is tempted to ignore the negative Klebs-Lœffler findings and waste precious time on serum, but the most common error is to mistake the case for syphilis and to resort to mercurials. The necessity of careful study of all of these obscure cases is further emphasised by the strong probability that the arsenical group of spirochæticides exhibit a specific action in Vincent's angina quite comparable to their specific action in syphilis. One fatal case had an ulcerative process that involved the tissues behind the tonsil, exposing the angle of the jaw and finally eroding a large blood-vessel.

The local treatment of Vincent's angina recommended is as follows: Perborate of sodium in powder, a mild, non-irritating gargle like Dobell solution, and glycerole of iodine applied only to necrotic or false membrane areas. In cases that do not yield promptly to this treatment, cacodylate of sodium $2\frac{1}{2}$ to 5 gr. in twenty-four or forty-eight hours (if the kidneys are not affected). In the malignant type, not improving under the above treatments, give neosalvarsan 0.6 grm. (average body-weight adult) intravenously. *J. S. Fraser.*

REVIEWS.

War Injuries and War Diseases of the Ear, Nose, and Throat. By Prof. Dr. RHESE. Pp. 272. Wiesbaden: J. F. Bergmann, 1918.

This book is interesting as giving the experience of a German otologist on war injuries. Certain sections are well written, e.g. injuries to the labyrinth, syphilis of the ear, etc., and results of experimental work are

quoted. His conception of hysterical conditions is, however, rather behind the times. As is common in this type of book, there is a large amount of superfluous material which does not bear very directly on the subject, but other parts of the book are well worth reading.

J. K. Milne Dickie.

Handbook of the Pathological Anatomy of the Human Ear. Edited by P. MANASSE, 2 vols. Wiesbaden: J. F. Bergmann, 1917.

The first volume of this handbook is devoted to descriptions by various authors of the pathology of the various diseases of the ear. The second volume consists entirely of plates with their explanations. There are altogether 119 illustrations, showing mainly microscopic sections of all the commoner and a number of the more uncommon ear conditions. The plates on the whole are of excellent quality, and the book is one which is of the greatest use to an otologist for reference purposes.

J. K. Milne Dickie.

Diseases of the Ear in School Children: An Essay on Deafness. By JAMES KERR LOVE, M.D., F.R.F.P.S.G. Bristol: John Wright & Sons, Ltd., 1919. Pp. viii + 94.

"I have tried to show that the 'Passing of Deafness' is not a Utopian but an eminently practical thing." The reviewer has the privilege of the novel reader and may take a surreptitious peep at the end of the book. This is the sentence with which Dr. Kerr Love finishes his excellent little book on ear diseases in school children. A perusal of the whole work leaves one with a feeling that he has fully proved his contention. The book is a record chiefly of three years' work undertaken for the Glasgow School Board in 1912-15. The value of the record from 1916-18 has been interfered with only in size; in other respects it has lost nothing.

The first four chapters deal with the treatment of suppurative and non-suppurative ears in school children. The author points out that, beyond tubercle and deaf-mutism, the amount of ear disease in the pre-school age is small, but it is when the child goes to school that—like the aspirant to matrimony in the proverb—his trouble begins. Dr. Love *italicises* the following pregnant sentence: "Nearly all the middle-ear disease of later life, both suppurative and non-suppurative, commences during the earlier years of the school period"; and, as a natural corollary to this: "Treatment of ear disease during the school period is more important than its treatment at any subsequent period." The truth of this latter statement should be patent to every otologist—the author makes it doubly so by a load of carefully sifted facts. The statistics given are most frank and honest—indeed, above criticism. The effects of systematic simple treatment by thorough cleansing, drying and medication, carried out by specially trained nurses under the aurist's supervision, were surprisingly good, and the figures given fully justify the claim put forward that chronic middle-ear suppuration is very amenable to treatment during the school period if conducted continuously by a competent nurse. Thus Dr. Love's view in regard to the treatment of middle-ear suppuration in children is an optimistic one. He contends that it is not true that the antrum is involved in most cases of middle-ear suppuration in children. Neither do they relapse when once cured, provided that the post-nasal space is kept healthy, and all water is kept out of the ear unless when it is used at the cleansing by the nurse.

The fourth chapter deals with syphilitic deafness and deaf-mutism.

Dr. Love's well-known work upon this subject is given, with additional facts, and the measures to be taken for the prevention of acquired deafness are summarised. A short chapter on the hearing test asserts that the best is some form of speech, and advocates the "six-foot rule," *i. e.*, that a child whose hearing is below that measure for whispered speech cannot profitably remain in the ordinary classes of an elementary school.

Chapter VI is occupied by a masterly exposition of hereditary deafness from the Mendelian point of view, and, after a few words upon educational arrangements, the book proceeds to general considerations on the medical treatment of school children. It is pointed out that the parents of children with deafness and children with running ears are, as a rule, ignorant of the dangers of these conditions and of the possibilities of treatment, and that this ignorance can best be dispelled by the carrying out of effective treatment through school clinics by the school authorities. Moreover, the solution of the problem of the prevention of deafness and of ear diseases lies ultimately in better housing, better feeding, and more sunlight. Nearly all deafness is due to infectious disease or wrong marrying. Hereditary deafness treated on Mendelian principles for two or three generations would become a curiosity.

Dr. Kerr Love's book should be perused by every otologist; it contains lessons for all.

Macleod Yearsley.

"THE CONSERVATIVE MASTOID OPERATION."

To the Editor of THE JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY.

SIR,—I have read in your March number the criticism on Heath's "Conservative Mastoid Operation."

From my experience of Heath's operation I find it applicable in a big percentage of operable cases.

The more experience I have of this particular operation, the more convinced I have become of its value to otologists.

It has undoubtedly come to stay, and its advocates are perceptibly increasing in number.

Mr. Heath's one ambition is to conserve the hearing, and if he succeeds in this we must commend his attempt to improve the lamentably lethargic condition which exists at the present moment.

The surgical instruments that he has introduced for this particular operation are very ingenious, workmanlike, and exceedingly adaptable.

I am,

Yours faithfully,

18, UPPER WIMPOLE STREET, W. 1.

MILSON REES.

March 27, 1919.

NOTES AND QUERIES.

Dr. A. J. Brady, of Sydney, Australia, writes under date December 30, 1918: "We had a congress of specialists in Melbourne last November. It was notable as being the first of its kind held in this part of the world. We had representatives from all the States of the Commonwealth with the exception of Western Australia, which, however, might be counted to have one in the person of Mr. Andrew, formerly of Perth, now practising in Melbourne. New Zealand was also represented. It was a combined congress of ophthalmic surgeons and oto-rhino-laryngologists. I was honoured by being asked to be president of the latter

section. I thought we had a most excellent congress. The men were all keen on work. We had a morning session each day at one of the three Melbourne hospitals, where practical demonstrations were given. We had afternoon and evening sessions for the reading of papers and discussions on same. The "transactions" are not yet published. They will be all right as regards the papers, but I fear the discussions will be inadequately reported. We intend holding the second congress in Sydney next year, when I trust we shall benefit by experience and make better provision for reporting discussions. Our method, of course, is to supply each member with a pad and ask him to supply a short abstract of his remarks at the end of the meeting. Now that the nightmare of war, thank God, is over, we all can take more interest in life and in our work. There will be nothing to prevent someone from the old country paying a visit to one of our conferences. It is a very pleasant voyage and an excellent rest.—Very truly yours, A. J. BRADY."

THE SECTION OF LARYNGOLOGY, ROYAL SOCIETY OF MEDICINE.

We extract the following from the editorial columns of the *Medical Press* for February 26, 1919:

"The first laryngoscope, Dr. Donelan tells us, was invented by Benjamin Guy Babington in 1829, and it is worthy of note that Manuel Garcia was domiciled in England at the time he invented his auto-laryngoscope in 1854.

"Dr. Donelan was for many years closely associated with Morell Mackenzie, the father of British laryngology. Mackenzie founded the Throat Hospital in Golden Square in 1863. For a man harassed from boyhood with almost continuous attacks of spasmodic asthma, his writings, based upon twenty years of pioneer observation, are, as Dr. Donelan observes, a remarkable achievement, for his views and conclusions have stood the test of time. Another pioneer was Lennox Browne, the founder of the Central London Throat Hospital.

"Dr. Donelan refers with just pride to the valuable work which has been done in this country by present-day laryngologists, notably in regard to tuberculosis and malignant disease of the larynx, thyrotomy, oesophageal disease, nasal lupus, submucous resection, and the operative treatment of frontal, maxillary, and sphenoidal abscess.

"I have observed that the Laryngological Section of the Royal Society of Medicine is a popular one. It is always largely attended."

THE AURIST KNIGHT.

About 1822 a brace of quack doctors succeeded in obtaining the honour of knighthood at the levee at Carlton House, which caused Lord Sidmouth, then Secretary of State for the Home Department, to have a paragraph on the subject published in the *Gazette*. This transaction occasioned the following lines:

"The wights who of late not for honour or fame
But for pelf stole the prefix of 'Sirs' to their name
Are no Knights of the Thistle, the Bath or the Garter
But Knights of the Clyster, the Pestle and Mortar.
The one puffs himself

The other's an Aurist! Pray, sir, do not stare.
You may hear of quack Aldis about Nelson Square.

The King not a sword should have used then but shears
And stripped these impostors of two pairs of ears:
Thus giving the Aurist, tho' with slight chance of pelf,
Two patients to doctor, his friend and himself."

The Spirit of the Public Journals, 1825, vol. iv, p. 240.

WYATT WINGRAVE.

SWIFT'S VERTIGO.

Dr. Wyatt Wingrave, in the February issue of the JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY, has revived in an interesting manner the question of Swift's deafness, and has communicated a number of very just observations on this subject.

As a reader of the works of Swift during a period of many years, and as a profound admirer of the genius of the "Copper-farthing" Dean, may I be permitted to offer certain remarks which, although they do not pretend to a complete solution of the problem of that bodily affliction which lasted throughout the greater part of the life of Swift, may yet be judged of some value towards the attainment of that solution.

Swift himself seldom makes any serious reference to this subject. The reader of his collected works in the editions of Sheridan or Hawkesworth, if he wishes to obtain all the references, will have to search through volume after volume of the journals, letters and miscellaneous trifles of which the twenty odd volumes are so largely made up.

There is to be found throughout frequent complaint (appearing for the most part in a strain of ironical and bitter humour) of the disease that persecuted him, sometimes in the form of doggerel verse, sometimes in epigram, or in the form of casual entries in the "Journal to Stella," and until that journal comes to a close with that last fateful evening upon which he heard the news of her death, and so composed himself under the stress of many and sorrowful memories, to write down the brief narrative of her life.

Johnson's account of the disease from which Swift suffered is simple and direct: "The disease of Swift was giddiness with deafness, which attacked him from time to time, began very early, pursued him through life, and at last sent him to the grave deprived of reason." That these seizures were of a sudden and violent nature is shown by other remarks of Johnson in his life of Swift. "As his years increased, his fits of giddiness and deafness grew more frequent. . . ."

As he was writing a poem called the "Legion Club" (1736) he was seized with a fit so painful and so long continued that he never after thought it proper to attempt any work of thought or labour.

Buried amid the rambling and shapeless collection of ephemeral verse and topical epigram which fill several volumes of the collected works, the following lines, written by the "Rev. Doctor Swift," occur:

"Deaf, giddy, helpless, left alone,
To all my friends a burden grown;
No more I hear my Church's bell
Than if it rang out for my knell.
At thunder now no more I start
Than at the rumbling of a cart;
Nay, what's incredible, alack!
I hardly hear a woman's clack."

The Dean makes game of his infirmity. It is, however, impossible to doubt that under the persecution of this disease, so relentless, so long continued, and often so violent in its effects, Swift suffered much.

His friends appear to have had but little notion of the nature and severity of the complaint. His very true and warm-hearted friend, Dr. Arbuthnot, writes to him (1723): "I have as good a right to invade your solitude as Lord B——, Gay, or Pope, and you see I make use of it. I know you wish us all at the Devil for robbing a moment from your vapours and vertigo."

John Hawkesworth, in his life of Swift—the materials for which, by the way, were largely supplied or communicated by Johnson—refers in many passages to the fits (sometimes of a severe and sudden nature) of giddiness and deafness by which Swift was attacked.

The truth is that while so much in the life of this cynical and arrogant genius is still unexplained, and must therefore remain matter for conjecture, the affliction under which he suffered is possibly capable of being clearly and simply stated. All accounts seem to agree in showing it to have been a chronic affection of the auditory labyrinth, or of the auditory nerve, or of both, and the manifestation of the disease as shown in those frequently recurring fits of vertigo and deafness was simply the manifestation of the familiar Menière symptom-complex. I do not say that fits of this nature comprised the whole of the symptoms of which Swift complained. Sometimes he suffered from headaches, most probably of aural origin, and sometimes he complained of his head and ears being stuffed.

As Dr. Wyngrave has very rightly observed, there is nothing in any record of his affliction that indicates a chronic septic disease of the ears. The records wherever they occur point to the sudden, spasmodic and violent nature of the complaint, and seem to fix its seat within the nerve mechanism of the internal ear, or within the brain itself.

Did there exist beside this dreadful bodily affliction some affliction of the mind, which may have been at the root of that strange savagery of temper, and of that equally strange depravity of intellect—a depravity that induced him to devote to purposes too often trivial and debased vast powers of mind which, in its effect, clouded his life with misery, and which at the end vitiated and darkens nearly all the work of this great but lonely and sinister genius?

ARCHER RYLAND.

THE NATIONAL BUREAU FOR PROMOTING THE GENERAL WELFARE OF THE DEAF.
Medical Committee.

A meeting of the above Committee was held on Friday, March 14, 1919, at 4 p.m., at the offices of the Bureau.

Ministry of Health.—Major Yearsley explained to the meeting that the following proposition of his, "That the Bureau shall take steps to safeguard the interests of the deaf and of the prevention of deafness in the coming Ministry of Health," had been brought up before the Executive Committee meeting of the Bureau, held on Friday, March 7, and that it had been passed and referred to this Committee for further action, and to formulate steps for the carrying out of this proposition.

Dr. Saleeby gave his views on the subject, and it was decided that a letter should be sent to Dr. Addison, asking him if he would receive a deputation from the Bureau on the subject of the prevention of deafness, or, if the time was inopportune, at a later date when it would be convenient to him.

It was also decided that a letter should be drafted, pointing out the policy of the Bureau, the figures giving the destruction of ears going on at the present time, and showing how easy the prevention of such destruction was, and should be sent to the Press. In this letter it was decided that the Ministry of Health should be mentioned, that it should be shown how such a Ministry would be of the greatest benefit to the deaf, and that a constructive policy should be suggested.

FORTHCOMING MEETINGS.

ROYAL SOCIETY OF MEDICINE, SECTION OF LARYNGOLOGY.

A Monthly Meeting will be held on Friday, May 2, at 4 p.m.

A Summer Congress will be held on Friday, May 2, 1919. Members of the Section are invited to contribute Papers, which may be read at the Congress. Papers will be read in the morning, demonstrations of cases, operations, specimens, instruments, will take place in the afternoon; and it is proposed to arrange a Pathological Museum of specimens relating to the subject. Those who intend to read papers or join in the discussion are requested to notify the Honorary Secretaries (see also p. 133).

ROYAL SOCIETY OF MEDICINE, SECTION OF OTOTOLOGY.

The next Meeting will be held on May 16 (Annual Meeting).

THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOTOLOGICAL SOCIETY.

The President of this Society for the current year is Brigadier-General H. S. Birkett. It will hold its Annual Meeting on June 6 and 7, at Atlantic City.

AMERICAN MEDICAL ASSOCIATION, SECTION OF OTO-LARYNGOLOGY.

The Annual Meeting of this Section will be held in Atlantic City between June 9 and 13.

AMERICAN LARYNGOLOGICAL ASSOCIATION.

The Annual Congress will be held on June 16, 17 and 18, in Atlantic City, conjointly with the American Congress of Physicians and Surgeons.

THE FRENCH OTO-LARYNGOLOGICAL SOCIETY.

The Société Française d'Oto-Laryngologie will hold its first meeting since 1914 on May 12, 13, 14 and 15 next at the Hotel des Sociétés Savants, Rue Danton, Paris Ve.

SOCIÉTÉ BELGE D'OTO-RHINO-LARYNGOLOGIE.

It is hoped to arrange the first meeting of this Society for the month of July in Antwerp. Further particulars can be obtained from Dr. Trétorp, 46, Avenue Van Eyck, Antwerp, Belgium.

THE JOURNAL OF LARYNGOLOGY, RHINOLOGY AND OTOTOLOGY.

Original Articles are accepted on the condition that they have not previously been published elsewhere.

If reprints are required it is requested that this be stated when the article is first forwarded to this Journal. Such reprints will be charged to the author.

Editorial Communications are to be addressed to "Editor of JOURNAL OF LARYNGOLOGY, care of Messrs. Adlard & Son & West Newman, Limited, Bartholomew Close, E.C. 1."

Authors of Original Communications on Oto-laryngology in other Journals are invited to send a copy, or two reprints, to the JOURNAL OF LARYNGOLOGY. If they are willing, at the same time, to submit their own abstract (in English, French, Italian or German) it will be welcomed.

INTRINSIC CANCER OF THE LARYNX; OPERATION BY LARYNGO-FISSURE AND ITS RESULTS.¹

BY SIR STCLAIR THOMSON, M.D., F.R.C.P.Lond.,
F.R.C.S.Eng.,

Professor of Laryngology and Surgeon for Diseases of the Throat in King's
College Hospital; Laryngologist to King Edward VII Sanatorium,
Midhurst.

Introductory.—It is by a curious coincidence, and not by design, that I find myself reading a paper here on the very anniversary of the date on which I was permitted to address this society seven years ago.² But it is by design and not by accident that I have chosen the same subject. This I have done because, as we all must have noticed, many clinical records are diminished in value because we are left in uncertainty as to whether the author, with increased experience, would continue to practise the methods he may have advocated. In writing a sequel, there is also the opportunity of recording how methods have been modified, altered, added to or abandoned.

Rarity of Laryngeal Cancer.—Cancer of the larynx is not a common disease. Semon, whose experience was extensive, saw 212 cases in private practice in twenty-eight years. Fortunately the intrinsic form is more common than the extrinsic. Of these 212 cases Semon found the disease intrinsic in 136. Chevalier Jackson's careful figures show that the more hopeful form, *i. e.* the intrinsic, is more frequent in the proportion of 98 to 43.³ Schmiegelow, in 66 cases of intralaryngeal cancer found the disease limited to a vocal cord in 36.⁴

¹ Basis of a communication read before the Medical Society of London, February 10, 1919.

² "Trans. Med. Soc. Lond.," vol. xxxv, February 12, 1912; *Brit. Med. Journ.*, February 17, 1912.

³ *Laryngoscope*, xix, August, 1909, No. 8, p. 587.

⁴ *Lancet*, August 1, 1914, ii, p. 300.

Delay in Diagnosis.—But, in addition to the endolarynx being comparatively rarely affected with cancer, only a restricted number of cases come to operation, either because the patient does not present himself until the disease has progressed too far for laryngo-fissure, or because the diagnosis is not made in good time. Hence, the experience on which our present-day methods are built up may appear to be founded on a smaller clinical material than that available for cancer in other parts of the body. This, however, is a good reason why it behoves every laryngologist who handles any number of these cases to publish his records in full. Experience comes so slowly that it is given to few laryngologists to see sufficient of these cases to enable them, from their own practice, to formulate all that should be known of the diagnosis and details of operative treatment. I know several laryngologists of good standing who have never had an opportunity of performing this operation. Even a large hospital clinic may fail to furnish suitable cases, owing to the neglect of "mere hoarseness" by the more uneducated class of hospital patient. Thus in my first seven years of private and hospital practice I never had a case for operation—or is it that I overlooked them? Even in the next eighteen years I have only encountered 4 hospital cases which justified a laryngo-fissure, while I have performed it 34 times in the much smaller field of private practice.

Statistical Results.—I have operated on 38 cases of intrinsic laryngeal cancer. Twenty-two of these are alive and well, without recurrence, at periods varying from six months to ten years since the operation, as shown in the following Table (A).

TABLE A.—*Twenty-two Cases of Intrinsic Cancer of the Larynx, out of Thirty-eight Operations, alive and well, without Recurrence.*

	Laryngo-fissure.					Time since operation.
	No. of case.					
Case	6	.	.	.	.	10 years.
"	10	.	.	.	.	8 $\frac{1}{2}$ "
"	11	.	.	.	.	7 "
"	12	.	.	.	.	6 $\frac{1}{2}$ "
"	13	.	.	.	.	5 $\frac{1}{2}$ "
Cases	17 and 18	.	.	.	.	4 $\frac{1}{2}$ "
Case	21	.	.	.	.	3 $\frac{1}{2}$ "
"	23	.	.	.	.	3 "
"	25	.	.	.	.	2 $\frac{3}{4}$ "
Cases	26 and 27	.	.	.	.	2 $\frac{1}{2}$ "
"	29, 30, 31, 32	.	.	.	.	2 "
Case	33	.	.	.	.	1 $\frac{3}{4}$ "
"	34	.	.	.	.	1 $\frac{1}{2}$ "
"	35	.	.	.	.	1 year.
Cases	36, 37, 38	.	.	.	.	6 months.

22 cases.

Seven cases survived the operation and died from other causes, at periods varying from ten months to ten years after the operation, as shown in Table B.

TABLE B.—*Death from Other Causes without Recurrence.*

No. of case.	Cause of death	Date after laryngo-fissure.
Case 3	Probably tuberculosis	10 years.
" 5	Lost sight of	6 "
" 9	Bronchitis and emphysema	6 "
" 8	Aneurysm	3½ "
" 1	Cancer on opposite side of tongue	3 "
" 2	Laryngitis	1½ "
" 28	Disease of heart and lungs	10 months.

7 cases.

Tables A and B added together show the after-history of 29 out of 38 laryngo-fissures without local recurrences.

Local recurrences took place in only 5 out of these 38 cases (see Table C).

TABLE C.—*Five cases of Laryngo-fissure followed by Local Recurrence in Thirty-eight Operations.*

No. of case.	Date of onset of recurrence.	Date of death after first laryngo-fissure.
Case 16	2 months	5 months.
" 20	3 "	12 "
" 24	3 "	15 "
" 4	8 "	2½ " (and 12 months after a total laryngectomy).
" 14	2 years and 9 months	2 years and 9 months (from heroin and suppression of urine).

5 cases.

Two cases died from recurrence of the disease in the glands but without recurrence in the larynx. In No. 7 this occurred seven and a-half years after laryngo-fissure, and in No. 15 it took place within 7 months.

Two cases are alive, but with recurrence. In one (No. 22) the disease recurred in the glands of the neck one and a-half years after laryngo-fissure, but without laryngeal recurrence. The glands were operated, and he is now well, with no symptoms, three years and two months after his first operation. In the other I suspect, but am not sure of, recurrence in the subglottic area and on the opposite side of the larynx, three and a-half years after operation.

Deaths.—In these 38 cases, comprising 4 females and 34 males, and varying in age from 40 years (Case 38) to 75 (No. 34), no patient has died from any cause directly attributable to the operation. One case (No. 14) was successfully operated on December 1, 1913. In 1916 he had a recurrence, and a second laryngo-fissure was performed on September 1 and passed off without any untoward incident: but he died forty-eight hours later, with drowsiness, contracted pupils, and complete

suppression of urine. He had been given $\frac{1}{2}$ gr. of heroin, in three doses of $\frac{1}{6}$ gr., within twenty-four hours. One of the doses was given by mistake: but still, $\frac{1}{2}$ gr. was not a large dose. There was no hæmorrhage, and I was very glad that as the case was one of extensive and subglottic recurrence I had left in a tracheotomy tube as a precaution.

Unfortunately I was out of London, but Dr. Irwin Moore and Mr. Wilfred Trotter were seeing the case for me, and they agreed that death was due to idiosyncrasy from heroin in a very alcoholic subject, and was not attributable to any operative cause.

Collected Published Results.—To show how my results coincide with other pioneers in this field and confirm their methods and views, I have combined my own experiences with those of Semon, Chiari, Chevalier Jackson and Schmiegelow in a table which I have adopted from the latter's publication in 1914.¹

TABLE D.—*Results of Laryngo-fissure by Various Operators.*

Operator.	No. of cases.	Cure over 3 years.	1-3 years.	Under 1 year.	Recurrence.	Deaths from operation.
F. Semon	24	15	4	1	3	1
Chiari	29	11	4	—	11	3
Schmiegelow	33	11	7	—	10	5
StClair Thomson	38	16	12	4	9	1
Chevalier Jackson ²	42	25	2	—	5	0
Totals	166	78	29	5	38	10

Semon's one case was due to the anæsthetic—rectal administration of ether. Schmiegelow's five cases died from pneumonia, due chiefly to post-operative hæmorrhage, and occurred early in his experience. My own case was due to idiosyncrasy for heroin.

Summary of Results.—Such a record confirms all that has already been said by my predecessors, viz. that these results are exceedingly good, that they compare favourably with those obtained by surgical treatment of cancer in other internal organs, and that the advance is striking when we remember that not so long ago the surgical treatment of this disease was regarded as almost hopeless. Schmiegelow observes that it was only at the end of last century that our views with regard to the malignancy of intra-laryngeal cancer were entirely revolutionised by Semon and Butlin, on whose work the whole of our present knowledge of the diagnosis and treatment of this disease is founded.³

*Recurrence during First Year.*²—My larger number of cases also confirms the view that, as Semon pointed out, the first year after operation is the anxious one as regards recurrence. In 10 cases of local recurrence, out of 30 operations by Schmiegelow, this took place within the year in 9 cases (in the tenth case it happened after seven years). Table C confirms this: indeed, I feel considerably diminished anxiety as to the result if the third month passes without any suspicion of

¹ *Lancet*, August 1, 1914, ii, p. 300.

² Personal communication, dated February 11, 1919.

³ *Op. cit.*

regrowth. When an epithelioma is limited to a vocal cord and recurs within twelve months I should regard it as an incomplete removal. Recurrence is more apt to take place, and at a later interval, when the anterior commissure or subglottic area is involved. I noted that the disease was "chiefly subglottic" in 10 cases, and the disease recurred in the larynx or the glands in no less than 5 of these.

Regrowth or Fresh Growth.—When the disease reappears after three years, should it not be regarded as a fresh new-growth? Tilley records a case where one cord was removed and that side of the larynx remained free for no less than thirteen years, when an epithelioma appeared on the opposite or intact cord. And Schmiegelow had a patient who died from cancer of the stomach eight years after a laryngo-fissure for cancer of the larynx, and another who died from cancer of the rectum eighteen years after laryngo-fissure. In both cases there was no regrowth in the larynx. Are such cases to be called recurrences?

I have not had a case of scar-infection.

Mistakes in Diagnosis.—In none of the 38 cases has the mistake been made of performing a laryngo-fissure for cancer and then finding the disease to be of another character. But in several cases the diagnosis had to be held in suspense for a variable time before operation, varying from a few months to a year. In one (No. 32) I took the condition to be tubercular, then syphilitic (from a positive Wassermann), and so a whole year passed before I could make up my mind to operate. The report of another case (under a colleague) as having "moderately advanced" tuberculosis of both the lungs led me to advise a course of treatment in a sanatorium. Three months there, without improvement, and with the onset of slight sluggishness in movement of the cord, induced the diagnosis of epithelioma, proved by microscopic examination after laryngo-fissure.

The Operation.—The variations I have been led to introduce in the technique of laryngo-fissure since I read a paper before the Medical Society in 1912 have only been recorded in scattered observations in the "Transactions of the Section of Laryngology" (Royal Society of Medicine). But lately my friend Dr. Irwin Moore, who has assisted me in all except the first 5 of my cases, has given such a careful, detailed, and well-illustrated description of my method that I cannot do better than refer those interested in the operative details to his articles in the JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY, vol. xxxiii, 1918, May-October.

There are, however, a few points of technique and after-care to which I might usefully refer in greater detail.

Anæsthesia.—I operated on one case (No. 5) under local anæsthesia, and would never again face the mental strain myself or submit any patient to such an ordeal. It presents no advantage over general anæsthesia.

The anæsthetic has generally been chloroform alone, but in some cases combined with ether or mixed with oxygen; twice (Cases 11 and 12) I tried intravenous ether. The anæsthesia was most satisfactory in both cases, but in one case (in which a hypodermic injection of scopolamine, morphia and atropine had preceded the administration) the patient was congested all the time and bled more than usual; and in the other (in which 2 oz. of ether and 40 gr. of hedonal in two pints of normal saline were used), the patient was plunged in such profound sleep for the following twenty-four hours that she was difficult to rouse,

and I did not like to meditate on what might happen in such circumstances if there had been any post-operative hæmorrhage or bronchial infection. Two or three times a preliminary hypodermic injection has been given of morphia and atropine, but only in cases of highly nervous individuals. I have found no necessity for it and no advantage, and I have preferred not to deaden reflexes and inhibit secretions, but to hold my morphia in reserve in case of bleeding after operation. When this was anticipated I have not withheld a hypodermic of morphia ($\frac{1}{8}$ gr.). I have no experience of ether-oil anæsthesia *per rectum*, but I have watched cases where it has been given for other operations. I cannot imagine any form of anæsthesia which can, in these cases, eclipse the open chloroform administration through the mouth until the tracheotomy tube is inserted, and for the rest of the operation through the cannula in the neck. The absence of struggling, congestion and hæmorrhage, the even and tranquil sleep, the freedom from frothing and mucus, the rapid recovery of consciousness, the freedom from sickness and vomiting, the rapid recovery of swallowing power and the complete absence of any bronchial or pulmonary troubles attributable to the vapour were most striking. Most patients were able to swallow within a very hours, and many of them sat out of bed and read their newspapers the same evening. It was the exception for a patient not to be sitting up in a chair the next day and eating solid food.

We all know that administration through a tracheotomy tube secures one of the smoothest and safest forms of anæsthesia, and that chloroform vapour is not an irritant of mucous membranes. But I think that two details which I have added to the technique have greatly helped in this satisfactory result: one is the preliminary infiltration of the skin incision with eudrenine solution; the other is the intratracheal injection of a $2\frac{1}{2}$ per cent. solution of cocaine. To these is largely attributable the absence of shock, spasm, cough, secretion, and hæmorrhage, and I think they secure anæsthesia with a less amount or a weaker dosage of vapour, and so help to the rapid return to consciousness. Behind any form of anæsthesia is the anaesthetist, and I have been very fortunate in the administrators, who have readily adapted themselves to my methods, and I would not feel so assured as I do now of absolutely satisfactory results if I had to work with anyone I was not accustomed to.

The Incision.—One long incision is made from the thyroid notch to the sternum. It has been proposed to make two incisions—one over the larynx and one for the tracheotomy, with a bridge of skin between the two. I see no advantage in this beyond a slight gain in the æsthetic result; but when it is noticed how insignificant is the straight white line of scar left in my cases, and when it is remembered that none of these patients are young, and that the majority are men, such a cosmetic gain does not balance the greater facility and safety of one long incision.

Preventive Tracheotomy.—Some surgeons perform laryngo-fissure without the safeguard of a tracheotomy. Moure, of Bordeaux, in a private communication (January 27, 1919), tells me that for several years he has done without it. I see no gain in abandoning part of the procedure which adds nothing to the danger or difficulty of the operation, which guards against the danger of any unexpected hæmorrhage, and guarantees the lower air-passages from the descent of blood or secretion.

Hahn's Tube.—This was only used in my first four cases. In the last 34 operations I have substituted a packing of knotted ribbon gauze tucked through the divided thyroid cartilage on to the top of the

tracheotomy cannula. It has acted so admirably that never one drop of blood gets past, and in none of these cases has there been the slightest bronchial infection.

If the absolutely flat position is adopted, and local anæsthesia of the external skin and of the larynx and trachea is secured with cocaine, as I have described, there is no need at all to plug off the pharynx through the split larynx as I see Schmiegelow still advises.¹

Leaving in the Tracheotomy Tube.—As a rule the tracheotomy tube is withdrawn from the neck as soon as the operation is completed, and is not replaced. This was done in 25 cases, but in two of these (Nos. 8 and 21) it had to be replaced for sharp hæmorrhage which came on five to six hours after the operation. I was glad in both cases that there had been a preventive tracheotomy, that the skin in the neck had not been stitched up over it, and that the cannula could thus be slipped back quickly.

In the other 13 cases a tracheotomy tube was left in position in cases in which there was a tendency to bleeding at the time of operation, or the patient was congested, or with a history of alcohol and tobacco, or in which the growth was very extensive or largely subglottic. The tube was left in twenty-four hours (in 5 cases), two days (in 2 cases), three days (in 2 cases), five days, seven days, thirteen days, and eighteen days (No. 5, in which both cords and part of the thyroid cartilage were removed).

The patient is more comfortable without the tube: it is a source of irritation and possible sepsis; the return to the normal route of respiration is a physiological desirability, and the tube can readily be replaced if required in the first twenty-four hours. At the same time I see no great objection to retaining it for the first day, particularly under the conditions I have mentioned, and when there is not an experienced surgeon close at hand.

Partial Excision of Thyroid Cartilages.—The first case in which I did this was in No. 5 in 1907,² and then it was done only because the cartilage was suspicious. Although I was struck with the absence of any consequent stenosis, in spite of the removal of both cords and part of the thyroid cartilage, I did not adopt it as I regarded the cartilaginous voice-box as an important framework, both to keep open the laryngeal canal and to limit extension of malignant disease in case of recurrence. The next case was No. 31 in 1917. Here the greater part of one ala was removed, as it was nearly eaten through by the growth.

I have since removed the ala in four cases (Nos. 34–37) in which it was not invaded, and one of these is here to demonstrate that, at any rate, it leaves no drawbacks, and I think it facilitates removal of the growth and certainly makes it easier to deal with bleeding. The excision of the thyroid ala has been practised and approved of by Mackenty, Broeckaert, Lack and others. Indeed, Wilfred Trotter tells me he has practised removal of the thyroid ala for ten years, though for another reason, viz. to obtain access from the side of the neck to extrinsic laryngeal growths. He has removed the entire ala some fifty times, and finds it a harmless and very useful procedure.

After Treatment: Position.—In no part of treatment is there a greater change than in the after-care. The contrast is best brought out by a letter I have from Sir Henry Butlin in reference to Case 9, which he saw with me in consultation. It is dated October 27, 1910, and

¹ *Lancet*, August 4, 1914, ii.

² *Brit. Med. Journ.*, 1912, February, 1917.

says—"The patient is not good for an operation: chronic bronchitis, emphysema, and a very intermittent and slow pulse. If he can stand lying with only an excuse for one flat pillow for four or five days after the operation, so that the liquids do not ooze down his air-passages, you may pull him through. But, if he has that oozing into his air-passages, particularly of septic liquid, I think that he will die." But I had already adopted the sitting posture ever since the year 1904, and this patient was out of bed on the third day, made a good recovery, and died without a recurrence six years later from emphysema and bronchitis.

My patients are placed in bed with a bed-rest in such a position that they are almost sitting upright. The same evening many of them sit out of bed and are able to drink sterilised water.

Granuloma.—The appearance of a large granulation in the wound during the period of healing sometimes gives rise to much anxiety. I find I have kept careful record of this condition in 11 cases. The granuloma was detected at times varying from fifteen days to two months after laryngo-fissure. It appeared on the cicatrising cord, or in the anterior commissure. In 4 cases it was left alone and took from three to twelve months to disappear.

In 5 cases I removed it, with the indirect method, through the mouth and under cocaine with McKenzies's duck-bill forceps, at periods varying from two to three months from the date of operation. The history of the other 2 cases in which it developed is interesting. In one (Case 19) the original growth had been chiefly subglottic. A month after operation there was a subglottic granuloma, so large that stenosis was threatened, and I had to do a tracheotomy. The tube was worn for six weeks, at the end of which time the granuloma had disappeared. (This is the case in which I now suspect recurrence on the opposite side.) In the last of these cases (No. 25) a large granulation, the size of a cranberry, appeared in the anterior commissure two months after operation. I felt very anxious about it at first. But at the end of ten months it had not increased and had a round and smooth surface. On attempt to remove it I felt that it was as hard as ivory: it was an exostosis. It caused little trouble, and was still present two years after operation. The patient was seventy-two years of age; he came in with a catarrh and had a troublesome cough after the operation, and one could feel that his thyroid alae took more than a month to unite. It was doubtless the callus thrown out on the inner surface which formed the enchondroma with the appearance of a granuloma.

No Shock; Rapid Recovery.—Most patients are sitting out of bed and eating solid food on the day following the operation. Case 34 is a typical one. I show his normal temperature chart. The patient was aged seventy-five. At 6 p.m. on the day of operation he was sitting out of bed reading the evening paper, and swallowing water easily. The next day he sat up morning and afternoon and ate solid food. On the fourth day after the operation he was out in a Bath chair, and on the twelfth day he returned to his home in Brighton under the care of Mr. Arthur J. Hutchison, who had kindly referred him to me.

The patient's windows are left freely open from the bottom day and night. All the old paraphernalia of screens round the bed, closed windows, an "even temperature," steam-kettles and such-like fetishes have long been abolished.

The Voice.—It has been my custom to keep the patient silent the

first three weeks after operation, thinking that rest was of primary importance to secure even cicatrisation of the endo-larynx. They then started whispering, and as soon as it was seen that a good cicatricial cord had replaced the one removed, they were not only encouraged to speak, but in cases of bad speakers further improvement was secured by sending them to a voice-trainer. Samples of the satisfactory voices which have been preserved are furnished by the patients here this evening. One of them (Case 36) is a working man, able to do a full day's work. His voice has been re-educated by Mr. R. Dansie in my clinic at King's College Hospital, and he will even sing you a few bars of "Three Blind Mice"! The voice after this operation is always sufficient for the ordinary purposes of life; in most the voice is better than it was before operation; schoolmasters have been able to continue their profession and others can make public speeches. Case 6, operated on in 1909, is now in his seventieth year, and writes to me that "he never stops talking and smokes no end." Case 17 was operated on four and a-half years ago; he is now seventy-four years of age, and tells me he can give a lecture lasting an hour and a-half to sixty people. I might add that he can walk twenty miles a day, and often does eighty in a week, takes a daily cold bath, sleeps with an open window, and neither smokes nor takes alcohol. It is also right not to omit that his blood-pressure is 210!

But all my patients have not kept silence for these first three weeks, and I am not sure now that they have not been rewarded with as good, or even better voices. By earlier resumption of vocal use I think better compensatory results have been obtained, and that there has not been that tendency to some contraction, and even slight stenosis, which I have observed in two of the most silent cases (Nos. 26 and 38). I think a week's silence is sufficient. I am encouraged in this view by finding that Chevalier Jackson says it is not wise to keep the patient silent too long, and that some vocal effort, three or four times a day, will do no harm, and help the restoration of the laryngeal motor mechanism.¹

In any case we can promise a fair voice, and when, in addition, we preserve the natural airway and save or prolong life, this operation is now one which gives great satisfaction. If patients applied early with epithelioma limited to a vocal cord, the death-rate should be *nil*, the restoration of voice satisfactory, and the cure lasting.

THE LARYNGEAL CHANGES INDUCED BY MUSTARD-GAS.

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THE following remarks are intended to give some account of the actual changes that are produced in the larynx by its contact with mustard-gas.

A large number of these cases have come under my observation as Laryngologist at the 73rd General Hospital, and the remarks which

¹ "Peroral Endoscopy," 1915, p. 667.

I now venture to offer are based upon my personal observation of very many cases of this character examined in varying stages of the affection.

There is some reason for making these observations at the present time, if merely on the grounds that I am unaware of directions having been laid down for the treatment and disposal of these cases with a view to the different phases and stages of the affection. Nor do I know of any exact account of the actual laryngeal changes that occur.

I wish to say that my observations are intended only to apply to the "gassed larynx" as it appears in a base hospital, and all that my data enable me at present to do is more or less to reconstruct the sequence of events from the first appearance of the typical lesion to the restoration of the larynx to ordinary health.

The laryngoscopic image of the typical lesion of the "gassed larynx" presents appearances which are strikingly constant and regular. The period of time which elapses after exposure of the larynx to gas and before this lesion presents its characteristic appearance seems to be very variable. Judging from the history of cases and from the statements of patients I am inclined to think that this period is represented by an average of three days.

An examination of a typical lesion indicates in rather a striking manner the high vulnerability of the true cords: indeed the true cords are picked out for attack with almost unerring precision. No doubt the earliest change of the true cord is similar to, if not identical with, the earliest and indeed the only change suffered by the conjunctival membrane, namely, a general injection and engorgement of blood-vessels. In the case of the conjunctiva it is obvious that this membrane is attended by a defensive mechanism which is absent, or rather, which is not represented to anything like the same degree of efficiency in the case of the rima glottis. The eyelids and the lacrimal gland constitute a piece of the defensive mechanism greatly superior to anything possessed by the larynx. In short, the eye can shut: the rima glottis must remain open and exposed. Necrosis of the conjunctival membrane as the result of exposure to gas is, I believe, unknown. In the case of the larynx everything seems to point to a necrosis of the epithelial cells of the true cords as a direct result of this exposure to gas. The area of vulnerability of the true cord to disease differs from the area of vulnerability of the true cord to gas. In the latter case this area is very constantly the middle third of the true cord, and it is here that epithelial necrosis occurs. This particular distribution of the necrotic lesion probably admits of a simple explanation. It is very common knowledge to those in the constant habit of performing indirect laryngoscopy that the true cords possess an unfortunate but very competent faculty for concealing their extremities from the eye of the observer. This is effected by a muscular action which brings the cushion of the epiglottis a little downwards and backwards, thus concealing the anterior extremities, and the bodies of the arytenoids inwards and forwards, thus concealing the posterior extremities. At the same time the free edges of the ventricular bands tend to approximate and conceal the external longitudinal halves of the true cords. That portion of the cord which remains unconcealed in this position of the larynx is the very portion which presents the appearance of necrotic change on laryngoscopic examination.

Very many cases have been first seen and examined by me at the

time when this appearance has apparently just become established. The picture presented may be described as follows: There is general but not severe congestion of the upper laryngeal orifice, in which congestion of the ventricular bands, of the arytenoids and folds and of the cushion of the epiglottis do not unduly or very prominently share. The larynx is not intolerant. The trachea, and more rarely the pharynx, may be involved in the general redness and swelling of the parts, but seldom to any very noticeable extent. Chordal paresis is not present. There is seldom difficulty in recognising the whole length of the true cords. Both extremities of both cords are reddened and inflamed and show vascular engorgement. Œdema—in any case at this stage—is certainly not the rule. The mesial longitudinal halves of the middle thirds of the true cords present as smooth, slightly raised, yellowish surfaces of the shape of a longitudinally split spindle.

This area presents the appearance of a yellow, fibrinous slough, and it overlaps the mesial free edge of the underlying cord. Approximation therefore suffers mechanical interference and vocalisation is hoarse or aphonic. Chordal paresis from any cause whatever is not common at this stage. The larynx is painful and there is dysphagia. The "yellow fibrinous slough" is adherent and tough. In course of time its overlapping mesial edge becomes less regular and may assume a notched or serrated aspect.

Hæmorrhage in connection with the cords I have never observed, even in those few cases where the lesion is very severe, and where an accompanying excessive engorgement of posterior pharyngeal vessels has led to bleeding from this latter area.

The lesion clears up in a constant and characteristic manner. The "yellow fibrinous slough" recedes and begins to disappear from without mesially. This process will continue until only a very narrow strip of yellow slough lies along the free edge of each middle third, leaving the area of cord from which it has receded a full pink colour. After the total disappearance of the slough the cords remain with rounded edges, pink in colour, and usually showing a little œdema, the distribution of which is variable, but which seems most often to involve the anterior two-thirds of the cords.

As to the laryngeal phases after recession of the typical lesion, the state of the larynx is then very comparable with the usual state of the larynx in chronic simple laryngitis of catarrhal or nasal origin, except that in the former state œdema of the cords is commonly present, and is apt to persist for a much longer period than is usually observed in the latter state.

Aphonia in the "post-slough" stage is difficult to treat, and whatever may be done for its removal, tends to persist for varying periods. It is no longer the aphonia of a mechanically hindered approximation. In this stage one or another type of myopathic paresis is almost always the rule. In some cases it is chiefly a weakness of internal tensors manifested by a narrow elliptical aperture between the cords on approximation; in others it is revealed by the small posterior triangular aperture immediately anterior to the interarytenoid space—in other words, there is a varying disturbance of muscular co-ordination for the purposes of phonation not differing in type from that ordinarily met with in simple and common chronic affections of the larynx.

The duration of this stage is considerably longer than the duration of the phase of the typical lesion. It is at this latter stage, of course,

that treatment is chiefly needed, and it is then of importance to ascertain the exact state of the parts by a careful laryngoscopy. It serves no useful purpose at this time to attempt the removal of the characteristic yellow slough. This will recede and gradually disappear in the manner I have already described. I have never seen anything approaching a dangerous degree of laryngeal oedema at any stage of this affection.

As regards the period of detention of these cases in hospital and their disposal after leaving hospital, one or two obvious points occur. As a laryngologist working at a base hospital I have observed that almost all the cases arrive at the hospital with the typical cord lesion fully developed. While the vocal cords remain in this state, and while the superficial slough persists, all cases have been detained in the hospital, and have received on each day or on every alternate day treatment to the larynx in the form of direct application to the cords under immediate inspection. A weak solution of menthol in liquid paraffin has been found as useful and as beneficial as any other application for this purpose.

As soon as the necrosed area clears up there is no further reason, in the event of convalescent areas being available, to keep the case longer occupying a bed.

The state of the larynx subsequently passes into one or other of those conditions of myopathic laryngeal paresis already referred to. At this stage attention to the matter of nasal patency and breathing and to the state of the general health should be given.

But the laryngeal condition (residual) in many cases will be found to resist with considerable stubbornness all attempts to reproduce the healthy state.

SOCIETIES' PROCEEDINGS.

ROYAL SOCIETY OF MEDICINE—OTOLOGICAL SECTION.

April 19, 1918.

President: H. J. BANKS-DAVIS, M.B.

(Continued from p. 128.)

Acute Mastoiditis in a Boy; Spontaneous Recovery.—**H. J. Banks-Davis.**—Three months ago this boy, aged eight, was admitted into hospital with an acute right-sided mastoid. There was bulging forward of the ear and post-aural tenderness, which was extreme, but no aural discharge, and I therefore looked upon the case as urgent, and he was prepared for immediate operation. Fortunately for him, this, for certain reasons, had to be postponed, and when I saw him next day all symptoms had vanished so rapidly that I decided to leave him alone, and he has had no further symptoms. His hearing is unaffected and the membrane normal. Free drainage through the Eustachian tube must have existed for resolution to occur so rapidly.

The PRESIDENT: It was three days before we got permission to

operate, although the local signs were urgent, and by that time these had subsided. His hearing is now normal, and there has been no further trouble.

Mr. O'MALLEY: Recently I have had two cases in which I felt convinced I should have to open the mastoid. Both had a bulging membrane, but in neither had the membrane perforated or shown evidence of pus. There was intense pain over the mastoid generally. I dealt with the cases by myringotomy, and they cleared up.

Mr. W. STUART-LOW: It is possible that this was an ill-defined diffuse furuncle of the meatus, extending to the tympanic membrane and to the peristernum of the mastoid with intense oedema. It is a fact that many such cases are operated upon in mistake for an acute mastoid condition, and this always cures them.

The PRESIDENT (in reply): I think a furuncle could not have got well so quickly. The only local treatment was to shave the head, and prepare the skin with iodine for operation. A girl who was admitted into hospital as a case of "acute mastoid," had intense pain and I was sent for to operate. I saw at once it was not an acute mastoid as there was a furuncle in the meatus and adenitis behind the ear. I told the resident medical officer to incise the meatus, and she was sent out. She, however, went off to another hospital, and I learned she had been operated upon for "acute mastoid" by the assistants, much to the annoyance of the aural surgeon there, who, as soon as he saw it, recognised the real condition.

Parotid Fistula of Twelve Months' Duration.—H. J. Banks-Davis.—Twelve months ago the patient, a man, aged fifty, had acute earache, with aural discharge on right side. He developed a small subcutaneous abscess in the neck below the mastoid, which was incised under gas in the Casualty Department. Ever since then he has had a watery discharge from a pin-point hole in the scar. When at meals "the water streams down his neck and he continually has to wipe it away." This shows the importance of not incising deeper than the skin in abscesses superficial to the parotid on the face, and also the importance of remembering that the superficial posterior lobe of the parotid extends back to the mastoid process. The sinus, which appears further back than one would expect, should close up under ionic electrical treatment.

Dr. KELSON: What is the evidence in support of it being parotid fluid? The discharge is said to come from the ear, and I do not see why it should not be cerebro-spinal fluid. It is said that there was an abscess first. The case is obviously a very rare one.

Dr. ALBERT GRAY: It is surprising if cerebro-spinal fluid appeared after all those months; I should expect the sinus to have cicatrised by then.

The PRESIDENT (in reply): If he is given anything to smell, or even to look at, the fluid streams out of the neck. I am obliged for the suggestion it may be cerebro-spinal fluid. The Pathological Department reported it was salivary fluid, but I will have further tests made.¹

¹ This has now been done, and the report is that the fluid comes from the salivary glands. Dr. Macdonald tells me that when the neck sinus healed by ionisation, pressure on the parotid caused fluid to exude from the ear. This is what members may have seen, and this the patient says occurs, but I have been unable to verify it, as on each occasion clear fluid exuded from the neck, although the mouth of the sinus is so minute as to be almost invisible.—H. J. B.-D.

Depressed Scar following Mastoid Operation.—H. J. Banks-Davis.—A girl, aged thirteen. Operation for acute mastoid disease was performed seven years ago. The post-aural wound, which had to be left open owing to the extent of the disease, has never closed over: the ear is dry and the bone cavity epithelialised. Two years ago I performed a plastic operation, but the skin and scar-tissue gave way, and the result was unsatisfactory. I should be glad of any suggestions. The patient's chief troubles are that the curved end of her spectacle wire is liable to be "caught up" in the cavity behind the pinna, and that she becomes giddy in cold weather.

Mr. O'MALLEY: If you had embedded a piece of cartilage in the neck and turned it up, like a plastic operation on the nose, you would have filled that hole in the mastoid.

Mr. SOMERVILLE HASTINGS: I should advise dissecting off the scar-epithelium covering the depression in the bone, cutting a piece of rib-cartilage to the right size and shape to fill the depression, and then bringing the skin edges together to cover this in. Rib-cartilage has such wonderful vitality that even if suppuration occurs the cartilage usually lives.

Mr. WHALE: I think this can be closed by a flap operation. There will be three stages: first, skin to fill in the cavity; second, another piece to cover it; and thirdly, when that is healed up an osteoperiosteal graft from the tibia. In February I saw Sebileau, in Paris, fill up an extensive depression in the frontal sinus in this way. He did not do a preliminary operation, because the skin was there already, whereas in this case it is not. A bed must be made for it first. I think you should not touch the posterior surface of the pinna: take a bold flap from lower down in the neck; there will be very little hair there yet, as she is young.

The PRESIDENT (in reply): It is on account of the deformity that I think another operation for closing up should be performed. In this case there was extensive bone disease, and such a deformity is particularly distressing for a girl. The antral and mastoid cavity has epithelialised, and the scar-tissue behind the ear is very thin, and doubtless will break down again.

Latent Mastoid Abscess.—Richard Lake.—This case was seen on April 26, 1916. The patient was a young man, aged nineteen, well developed, with the following history, which appeared to be both interesting and somewhat unusual. Five years ago he had an acute attack of measles, during which he suffered from acute otalgia on the right side. This was followed by considerable swelling in the posterior superior triangle of the neck on the same side. This swelling was treated by poultices for some considerable time, and ultimately disappeared. At the same time a large amount of pus was discharged through the nose and mouth. After this spontaneous evacuation of the pus the medical man in attendance was able to squeeze more pus from the neck through into the nasopharynx.

To all intents and purposes the boy became perfectly well, but since his illness it had become a great effort to him to work. There seem to me to be some discrepancies in the statements as to his mental condition before and after the evacuation of the pus, but, judging from what appear to me to be more reliable data, it seems that previously he was by no means mentally brilliant. Too much stress should therefore not be laid upon the fact that it was an effort for him to work afterwards.

although at the time he was under my observation, as will be seen, I did not take this view. The young man went to college, where he was completely unable to concentrate his attention on the subjects he was studying. When seen his appearance was that of chronic sepsis, his complexion being sallow and his expression rather dull. He gave me to understand that he was the subject of frequent earache and headache. He was at that time suffering from earache, about which he was sent to me for an opinion.

On examination there was distinct tenderness, though not pain, on pressure in the lower part of the mastoid process on the right side, being especially marked at the tip and in front. There was no tenderness over the mastoid antrum, and the drum, although it was rather dull in appearance, showed no sign of any inflammatory condition, nor was there any bulging of the drum or meatus. On the following day the tenderness had become slightly more pronounced, and there was some swelling over the lower end of the mastoid and the posterior and upper part of the neck, but it was by no means marked. There was also a question as to whether or not there was slight swelling of the posterior part of the tympanic membrane.

I opened the mastoid on April 28, and the condition found is well worthy of notice. To begin with, the periosteum was firmly adherent, and considerable effort was required for its deflection. The bone itself was extremely dense, and—though white and dry—was very fibrous in consistency. Pus was found in the antrum and evacuated, but there was no obvious track leading further on. The outer wall of the tip of the mastoid was then cut away, and a cavity was exposed, yielding at least half a drachm of pus. This cavity was lined with a thick layer of old granulation-tissue.

The usual treatment was adopted, and healing occurred without any interruption worth mentioning. Owing to the mental condition of the patient, I was unable definitely to exclude the possibility of an origin from temporo-sphenoidal abscess. This possibility, however, was negated by Dr. Henry Head after careful examination. There appears to me to be absolutely no doubt that this young man had a perforation of the inner wall of the mastoid process into the digastric fossa, and that the pus followed the somewhat unusual—but by no means unheard-of—course of the under surface of the Eustachian tube, and evacuated itself into the nasopharynx. He then appears to have had a latent empyema of the mastoid, which now and then became slightly active, but always quieted down under treatment. As I told his mother, I considered that this attack was rather a good thing for him than otherwise, in that it led to his mastoid being opened, and the state of affairs definitely settled.

Dr. P. WATSON-WILLIAMS: Were the organisms examined? It looks like staphylococccic infection. Sometimes they are inhibited by plenty of polynuclears, so there may be a collection of pus which is very indolent and yet keeps up some septic infection. It is a common mistake to regard the staphylococcus as a harmless organism. It is as harmful as streptococcus, but takes longer in developing complications.

Dr. DAN MCKENZIE: This is one of an interesting series of cases in which pus tracks down from the mastoid region, or the deep mastoid region, towards the nasopharynx, going in an inward and forward direction. They must be commoner than we suppose. Three years ago I collected notes of sixty of them from the literature.¹ Some have been

¹ JOURN. OF LARYNGOL., RHINOL., AND OTOL., 1915, xxx, p. 12.

post-mortem cases, the condition not having been recognised during life, probably because an examination of the throat in cases of mastoid abscess is not always made. Some have been treated successfully by the method Nature has adopted in this case—namely, the opening of the abscess in the pharynx. If the cellulitis in the neck continues and does not heal up in spite of free incisions in the neck, when the pus discharges from the pharynx, or the abscess is opened there, the case quickly gets well. The reason seems to be that that is the lowest point in the extensive abscess formation. I have shown one case in which pus got as far as the pharynx, but I opened it from the ear, through the anterior meatal wall, getting into the pterygoid maxillary fossa, deep to the inferior maxilla. Mr. Cheatele has reported two or three of these cases.

Mr. LAKE (in reply): The pus was not examined in this case.

Extradural Abscess perforating Skull.—Richard Lake.—This case was that of a man, aged fifty-eight, who was sent to me by Dr. Cobblelick with an eight weeks' history. The commencement of his illness was an attack of influenza, after which he became very deaf on the left side. About a fortnight after the onset of the influenza there was some meatal swelling and pain on the left side. He remained deaf and unwell until about two days before I saw him, when a large swelling suddenly developed just behind the back of his ear, midway between the external meatus and the external occipital protuberance, and almost in that line. There was no sign of any trouble in the middle ear, nor had there been after the temporary tenderness of six weeks before.

He was taken into a nursing home, and operated upon the following morning. A curved incision was made with the convexity upwards, commencing with the tip of the mastoid, and terminating at the posterior aspect of the swelling previously referred to. Through the posterior portion of the incision a large abscess-cavity was opened. This, when cleaned, showed a perforation into the left parietal bone. This was opened, and followed forwards, into an intracranial and extradural abscess-cavity, which extended to the posterior portion of the mastoid process, passing round and in front of the lateral sinus. The whole of the mastoid process itself was involved. All the diseased tissue was very completely removed, a very free opening into the middle ear made under antiseptic precautions, and the wound closed. Healing was quite uneventful, and hearing completely restored, as it also was in the case previously reported. I think it is only just to say, in regard to the original operation for the relief of acute mastoiditis, that if the operation is not unduly delayed, and if it is efficiently performed, the probabilities are that there is no loss of hearing.

The PRESIDENT: Perforation of the parietal bone is an unusual event. I agree with the statement, "if the operation is not unduly delayed, and is efficiently performed, the probabilities are that there is no loss of hearing."

Loss of Hearing due to Delay in Operating.—Richard Lake.—This is a case which I am adding in order to show the disastrous effects of delay in acute and subacute suppurative otitis media.

A little boy, aged five, was brought to me on April 16, 1916, when I advised immediate operation. Although tenderness over the mastoid antrum was slight, there was deep swelling of the upper and posterior part of the meatus. Suppuration had lasted for a sufficiently long time—that is to say, six weeks—to lead me to express the opinion that unless

operation was done within a reasonable time the boy's hearing would be lost, to say nothing of the fact that as long as suppuration persisted he was exposed to unnecessary danger. I cannot but think that it was very unfortunate that he was taken to get another opinion—or perhaps I should say that it was particularly unfortunate that he was taken to the particular person who gave the opinion—for the mother was assured that there was no reason for operation. Six months later the boy was brought to me again, the suppuration still persisting, although the tenderness had quite disappeared, and so had the hearing. I operated, with a satisfactory result so far as the suppuration was concerned, but the boy remains completely deaf on the affected side.

Cerebral Abscess; Hernia Cerebri; Avulsion of Abscess Wall; Complete Homolateral Ophthalmoplegia; Recovery.—**W. M. Mollison.**—The patient, a boy, aged twelve and a-half, was admitted to Guy's Hospital on September 22, 1917, suffering from frontal headache and vomiting, with pain and tenderness over the right mastoid process. There was no history of otorrhœa, but the patient had had scarlet fever at the age of two. Four weeks before admission the boy struck his head in a swimming-bath; though dazed he was able to walk home, and had no further symptoms for fourteen days. He was confined to his bed with an illness which his doctor diagnosed as mumps: he had pain in the right ear, was sleepless and restless, had much headache, which made him cry, was somewhat intolerant of light, had no appetite and lost weight rapidly. For the week previous to admission vomiting, at first once a day, became frequent. Stated to have had otorrhœa for two days only.

On admission the temperature was 97° F., and pulse 68; the boy was drowsy and lay curled up on his right side; he had photophobia and complained of frontal headache. There was foul pus in the right meatus and a perforation in the posterior part of the membrane; the right pupil was larger than the left and optic neuritis was present. Lumbar puncture showed the cerebro-spinal fluid clear, but under increased pressure. Tenderness over the mastoid process was not marked. Cerebral abscess was diagnosed. Operation was performed, and about an ounce of foul pus evacuated from a temporo-sphenoidal abscess, and a double rubber drainage-tube was inserted. The boy made good progress till October 19, when he again exhibited symptoms of pus retention, and a further collection of pus was opened. He improved, but again on November 3 a further collection was evacuated. The patient was now very ill and a hernia cerebri developed; lumbar puncture showed cloudy fluid but no organisms on cultivation; the temperature rose, and on one occasion reached 105° F. On November 10, while dressing the wound, a large part of the hernia was pulled off, and was found to consist largely of the cerebral abscess sac: this was removed entirely. Hypertonic saline was now used as a dressing. Three days later complete ophthalmoplegia was noted to be present on the right side and paralysis of the opposite external rectus.

Mr. Ormond kindly saw the case and reported:

“Right eye looks straight forward; very slight movement up and down, even less from side to side; no paralysis of levator palpebræ. Pupil is large but reacts sluggishly; optic neuritis in both eyes. Left eye: No movement outwards, pupil active. I think this condition due to interference with the centres for movement in the Rolandic area. ? Œdema.

No local lesion will account for an involvement of third, fourth and sixth nerves, omitting the levator palpebræ and internal branch of the third."

The boy now made a slow recovery, and was discharged on December 29. The movements of the eyes gradually returned to normal.

Subacute Mastoiditis; Paralysis of corresponding Sixth Nerve, recovering; Latent Maxillary Antral Infection, illustrating the advantageous Exploration of Sinuses by the Suction Syringe.¹—**P. Watson-Williams.**—Examples of sixth-nerve paralysis (paralysis of external rectus) occurring in association with mastoiditis are sufficiently rare to be worthy of record, and as the fatal cases have been attributed to meningeal infection at Dorello's space, the cases which spontaneously recover lead one to consider how far meningeal infection is an essential pathogenetic factor.

Another point of interest is that this patient, whose case was incidentally referred to by the reporter at the last meeting of the Otological Section, exemplifies the advantage of routine exploration by the suction syringe of the antral and sphenoidal sinuses in all cases of mastoiditis, even where the previous examination of the nose by the usual methods of inspection has led one to exclude sinus infection.

Sister K—— was referred to Dr. Hogan on December 3, 1917, complaining of purulent discharge from the right ear for one month with pain over the mastoid area increasing for a week. The mastoid region was red, swollen and tender, deafness almost complete, pus escaping from large tympanic perforation. Patient thin, sallow and weakly; had caught cold in air-raid while working in Poplar. Nose: no discharge seen by anterior rhinoscopy nor by careful endo-rhinoscopy: condition believed normal.

December 14: Having been under observation in the nursing home for ten days with local treatment for the ear, no nasal symptoms nor discharge, a radical mastoid was performed, as the unnaturally small size of the meatus and extensive cellular formation led to the conclusion that a modified mastoid operation would fail. Exploration of the maxillary antra by washing with the suction syringe: right antrum quite clear, left antrum full of yellowish, curdy pus. Sphenoidal sinuses explored, both sides clear. After the usual mastoid operation the left antrum was opened pernasally through the inferior meatus sufficiently for drainage.

Subsequent film examination and culture report by Prof. Walker Hall: "Right antrum: Film—polynuclears and excess of mucus. Culture—no cocci, *proteus* only. Left antrum: Film—polynuclears. phagocytosis of G. P. Culture—cocci, G. P. staphylococcus; *Bacillus proteus*. (Pneumococci and bacilli did not grow out in special media.)" This report justified the antral operation despite the absence of so-called characteristic symptoms pointing to antral infection, and seems to explain the source of the aural infection. December 20: Patient steadily progressing, but purulent discharge from the mastoid wound extraordinarily profuse. Eyes examined by Captain Stack. No optic neuritis, no paresis. Facial paresis slight; had developed about three days after operation and still present. December 29: Still much purulent discharge. Facial paresis has disappeared, but the right external rectus has become paralysed: double vision. There are no general nor cerebral symptoms characteristic of meningeal infection. January 3: Still much pus from mastoid area. January 26: Patient sent home with mastoid wound healed, but right

¹ See also JOURN. OF LARYNGOL., RHINOL., AND OTOL., vol. xxxiii, p. 200.

sixth nerve still completely paralysed. March 4: Doing very well. Captain Stack reports that the right sixth nerve is recovering, and that "the movement is now almost normal, diplopia is less, and therefore more bothering."

Note.—Except for a slight rise of temperature the day after the operation the temperature remained practically normal throughout.

The extraordinary purulent discharge from the mastoid wound with transient facial paralysis developing some days after operation and succeeded by sixth-nerve paralysis suggested that the cellular condition of the mastoid and petrous portion was unusually developed. Anxiety was felt as to the possibility of meningitis developing, but was negated by the absence of any characteristic symptoms. The fact that the nasal sinuses had been explored and the infected antrum opened and drained reassured the operator when the unusual purulent discharge from the mastoid area suggested sources of reinfection. Had such exploration been omitted at the time of operation it would have been carried out subsequently. Latent infective nasal sinusitis may cause no local nor characteristic symptoms and give rise to no obvious nasal discharge, while also proving a source of danger.

This is the case referred to by the speaker at the last meeting of the Section to illustrate the desirability of a routine exploration of the sinuses in suppurative otitis, the method being simple and accurate and occupying only two minutes under an anæsthetic, or, if done previously, under cocaine anæsthesia. Definite gross evidence of the purulent nature of the extracted discharge is usually essential before an immediate operation on the sinuses found involved is justifiable. But more conclusive evidence of any given sinus being infected may be furnished by the subsequent pathological report, although no gross evidence of pus is found in the sinus washing. In other words, it is contended that a nasal sinus may be infected by pyogenic organisms, but that the polynuclears may be relatively so scarce that the discharge does not appear to the naked eye to be definitely purulent. Moreover, it is contended that, given a sinus infection, the relative paucity of polynuclears tends to result in systemic toxic infection, whereas the cases in which the polynuclears are prolific often suffer less from systemic poisoning, inasmuch as the more active phagocytosis protects the patient when the discharge is the more definitely purulent. The failure to observe pus in the nasal passages does not exclude an active nasal sinus infection, and in suspicious cases the general symptoms or other evidences, *e. g.* local complications, may call for further investigation of the sinuses than the ordinary routine methods of inspection, particularly when the latter are negative.

Whether an operation should be performed on an infected sinus is another matter, and often enough lavage of the sinus and injection of a suitable disinfectant will ensure its restoration to a normal condition, and prevent that source of infection remaining operative for further and more wide-spread infection.

Dr. WATSON-WILLIAMS: I suggest the advisability of exploring the antra in all cases in adults, even sphenoidal sinuses also, when the patients are on the table under an anæsthetic, as it only takes a couple of minutes. Knowing whether the antra are clear or not assists in the operation. Latent sinus infection is more frequent than we have any idea of. I have had more than a couple of thousand cases in which I have used the exploring syringe, and I have been driven to the conclusion that pus may sometimes be found in cases in which there was no previous

indication of its presence. Recently a child came to me with symptoms of adenoids: there were no adenoids, nor enlarged tonsils; she seemed stupid, and had had recurring colds and nasal catarrh. Exploring her antra under an anæsthetic I found them clear, then exploration of the right sphenoidal sinus proved it clear. But on putting the cannula into the left sinus, I drew out over a drachm of thick pus, and, by the way the syringe worked, I knew there was polypoid degeneration of the lining mucosa. I opened and drained this sinus. Further, I feel convinced that cases of adenoids and tonsils are sometimes caused by a latent sinus infection. Constant re-infection of the tonsillar tissue causes it to become hypertrophied.

Dr. PEGLER: Does Dr. Watson-Williams mean by that suppuration can start the growth of pure lymphoid tissue? If so, it is an aspect of pathology which I do not understand.

Dr. WATSON-WILLIAMS (in reply): I believe the essential cause of hypertrophy of the nasopharyngeal tonsil and of the faucil tonsils is a lymphoid cell proliferation due to infection. And you will find that where there is a free response in lymphoid cell proliferation, there may be greatly enlarged tonsils with only very slight symptoms. And on the contrary you will often find clinical symptoms well marked where the enlargement is slight, because the infection is not inhibited by the effect of a free lymphoid cell proliferation. In acute tonsillitis the tonsils are often so enlarged that you think they must be operated upon soon; however, they often subside after the acute infection has ceased.

Concentric Narrowing of each Meatus following Scarlet Fever.

—Herbert Tilley.—Mrs. C—, aged forty-seven, applied to University College Hospital for “deafness” and “noises in the head.” Examination: Each meatus was found to be obstructed by a diaphragm with a central perforation of a calibre which would admit the lead of an ordinary lead pencil. The edges of the perforations are clear cut, white, and rather resistant. The stenoses thus caused are rather to the outer side of the junction of the cartilaginous and bony meatus. In each meatus there was some purulent discharge. After cleansing the passages and inflating with catheter, the hearing improved and the tinnitus ceased for two days. The patient says her symptoms date from an attack of scarlet fever at the age of five years.

Dr. PEGLER: These constrictions remind me of the conditions seen after mastoid operation, in which there is an inveterate tendency to form a perforated web or ring of dense fibrous tissue round the region of the membrana tympani. I have had cases in which the ring has been removed and every method adopted; sometimes the whole ring has been cleared away, but without success.

Mr. O'MALLEY: I have had a case of which Mr. Tilley's reminds me, and I mention it because he may be thinking of doing an operation of a plastic kind on the ear. I did a plastic operation in my case, and I thought it would do excellently, but it has closed to a narrow limit, and I am very dissatisfied. For a similar case I should in the future skin-graft.

Dr. ALBERT GRAY: An interesting feature in this case is that it is bilateral. It is astonishing how very few become narrow after even prolonged suppuration. Since in this case both ears are narrowed, there must have been either some peculiarly irritating condition during the illness, or it is a case of congenital narrowing. But it looks more like scar-tissue, which would be against congenital narrowing.

Dr. WATSON-WILLIAMS: I have seen an extraordinary instance of concentric narrowing of the meatus in a child. He was referred to me by Dr. A. Hutchinson, who had done a Schwartze operation on him. It was extraordinary how the child recovered with such a small meatus— $2\frac{1}{2}$ mm. across. I think it was congenital, as Mr. Tilley's case may be.

Mr. TILLEY (in reply): At the circumference of the perforation one comes upon hard tissue. The idea of operating did not occur to me. I thought if I could relieve the discharge and get rid of the tinnitus it was all I could do.

Aural Fibroma.—L. H. Pegler.—The patient, a widow, aged seventy-three, of rather stout habit and in excellent health, consulted me at Fitzroy Square Ear and Throat Hospital in February, 1918, for a growth blocking up her right ear, with accompanying deafness. About two years ago she consulted a doctor, who told her she had a thickening of the drum, and the growth does not seem to have been visible externally more than two months. She has never had suppuration from the ear, and there were no inflammatory conditions. Neither macro- nor microscopically did the growth resemble the familiar aural polypus in any of its forms.

Inspection.—A tumour, of which the visible part was as large as the broad end of a pigeon's egg, projecting $\frac{1}{4}$ in. from the orifice of the external meatus. The surface was smooth, rather paler than the surrounding skin, and not sensitive to touch. With a probe the tapering body could be traced deeply to the fundus of the meatus, and a layer of cheesy material separated it from the meatal walls. I removed the growth under cocaine with the wire loop of a nasal snare. The hæmorrhage was free, and, owing to this, the attachment of the root could not at the time be ascertained satisfactorily. Subsequent changes in the part during healing have not assisted much in determining this point, especially as the growth came away entire, and there have been no remains of root or stump to cauterise or curette away. Until this afternoon I had not been able to see the patient for some weeks; at the last examination the greater part of the tensa and flaccida region were still undergoing change, and presented a smooth, red surface, not painful, and not yielding to gentle pressure with a probe. To-day I find this surface coated with a moist epithelial *débris*, and the patient speaks for the first time of a slight "watery" discharge—non-purulent and inodorous. There is some improvement in hearing. The left ear is quite normal.

Pathology.—The jar specimen exhibited in spirit was mounted at the Royal College of Surgeons by Prof. Shattock, who has accepted it for the College Museum, with a microscopic section. It is a pear-shaped body with a tapering stalk, which measured in the recent state about $1\frac{1}{2}$ in. in length and nearly 1 in. in circumference. A longitudinal segment has been removed for microscopic examination; the horizontal constriction near its middle was caused by the snare loop. The section consists from end to end of fibrous tissue, varying in density. In places it is made up of delicate interlacing fibrils, many of the cells of which are branched. Elsewhere the structure is denser, exhibiting bundles of wavy fibres which pass imperceptibly into the looser tissue. The arteries and veins seen in section do not call for special mention. The tumour is covered with normal stratified epithelium, which is furnished with a *stratum granulosum*.¹ The layers of squamous cells seen on the surface

¹ This has an important bearing upon the question of its origin.

account for the smooth, skin-like contour presented by the protruding portion of the growth.

Dr. A. GRAY: I think this fibroma sprang from the meatus, and not from the tympanic membrane, as the epidermis covering the tympanic membrane does not run in the wavy outline that ordinary skin does: this runs with the corium sticking up.

Mr. WHALE: I suggest Dr. Pegler should look to see where are the scars left by removal, now that he has removed the growth.

Mr. TILLEY: I think Dr. Pegler should adopt the suggestion made by Mr. Whale—viz. get rid of some of the desquamation by means of peroxide of hydrogen or carbonate of soda solution, and then apply a large-sized Peter's speculum (Siegle's) to the meatus. That method will give more information about a drum adhesion or perforation than any other means, and it does not seem to me that the value of the instrument is as appreciated as it should be.

Dr. PEGLER (replying to Mr. Tilley): I shall always employ Peter's modification of Siegle's speculum in my aural work. I shall certainly show the patient again.

[*N.B.*—At the time of going to press the features of this case have cleared up considerably. The whitish *d'bris* has been got rid of by syringing, and the red, hardish, rather irregular surface has appeared again, but inferior to this, about two-thirds of the inferior quadrant, consisting of a thin, greyish, papery membrane, has come into view, and moves slightly when examined with Peter's pneumatic speculum. The patient may be shown again at a later meeting.]

ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

November 2, 1917.

President: Dr. A. BROWN KELLY.

(Continued from p. 133.)

Epithelioma of the Ethmoidal Labyrinth; Lateral Rhinotomy; Removal.—**Dan McKenzie.**—The patient is a woman, aged forty-one, who was sent to the Central Throat and Ear Hospital by Dr. Cowie, of Denmark Hill, in July of this year. The only symptom was epistaxis. But as this had been continuing for about four years in ever-increasing severity she was pitifully anæmic. The growth was polypoid and occupied the left ethmoidal region, and diagnosis was made by Dr. Wyatt Wingrave microscopically before operation.

In view of the grave anæmia, efforts were made to complete the operation as rapidly and with as little hæmorrhage as possible. The inner aspect of the nose under the nasal bones was therefore liberally treated with adrenalin. And after the external incision and manipulations had cleared the bone, the lower edge of the nasal bone was defined and a septum elevator introduced below it to separate it from its underlying mucoperiosteum. Thus isolated the bone was rapidly nibbled away with mastoid gouge-forceps, and this method proved to be much more rapid than the use of the chisel would have been.

The rest of the operation proceeded along familiar lines, and the whole was completed in fifteen minutes with a trifling loss of blood.

The patient has made a good recovery both from the operation and from her anæmia, and at the time of writing there is no sign of recurrence either locally or in the cervical glands.

Lieut.-Col. PERRY GOLDSMITE: Up to what age would Dr. McKenzie accept a patient for this operation? Probably you have had cases of sarcoma of the nose, in which intranasal operation has led to disastrous results in elderly people: there may be severe hæmorrhage, and septicæmia following it, while recurrence has been rapid. I have noticed this in several cases aged fifty and over. A patient may have sarcoma of the nose and yet live in comfort for a considerable time.

Mr. HERBERT TILLEY: What is Mr. Shattock's opinion on this case? How curious it is that these malignant growths in the ethmoid and the nose in general are often so amenable to surgery, or even, in some cases, to radium emanation! Probably in this patient the epithelioma has the same macroscopic and histological appearances as an epithelioma elsewhere, yet in the last-named we would not be surprised at a rapid recurrence, in spite of radical surgical treatment, while in the nose we rather expect them to get well. At the hospital to-day I saw a woman from whom, last May, a large endothelioma was removed from the inside of the nose. There is no sign of recurrence, the pain has gone, and the hæmorrhage, which had been very profuse, has ceased. Yet it grew in a space which is practically honeycombed with cells, where one would imagine the most careful operator would be liable to overlook small extensions of primary growth. Furthermore, in the nose it is extraordinary how 100 mgrm. of radium emanation, buried in the growth for twelve hours, will cause them to melt away, and they will then remain passive or disappear entirely for years, and some seem to be cured. If there is anything which Mr. Shattock can tell us as to the explanation of the different degrees of such malignant growths in different regions we shall be much obliged to him.

Sir WILLIAM MILLIGAN: What forceps did Dr. McKenzie use? Possibly he used Citelli's mastoid forceps; if not, I would suggest that instrument. I agree with what Mr. Tilley said about the frequent non-malignancy of these growths in the nose, which have been diagnosed as malignant. I remember the case of a lady on whom I operated nineteen years ago for what was pronounced, by competent pathologists, to be a round-celled sarcoma of the ethmoidal labyrinth. It occupied practically the whole of her right ethmoidal region, and the operation was performed under considerable difficulty, as the patient nearly died of hæmorrhage. Many years ago she developed a similar growth in the left nasal passage. It was so extensive in the upper ethmoidal labyrinth that its exact point of origin could not be detected. It was successfully dealt with, and again pronounced—though not by the same pathologists—to be round-celled sarcoma. I did not expect recovery, but she has recovered, and is well, with the exception, naturally, of suffering from a marked nasal atrophic condition. I have also been struck with the fact that there appears to be a type of malignant disease of the nose which, clinically speaking, appears to be a non-malignant as well as a very malignant type, the growth in the latter being surprisingly rapid. I do not know that there is any difference in the actual objective external appearances.

Sir STCLAIRE THOMSON: This point was brought out by the late Sir Henry Butlin, who said in 1901: "Our present knowledge and prognosis

in regard to this type of growth is almost impossible, some cases recurring rapidly, while others give excellent results."¹ Mr. Shattock will remember a specimen I sent him from a case which I had seen in consultation with Sir Henry Butlin in 1909. Mr. Shattock's report on the microscopical section sent was: "A typical specimen of lymph-endothelioma." I operated upon it, and now, seven years afterwards, the patient is well, and without recurrence.

Dr. SYME (Glasgow): This case recalls to my mind one or two similar which I have seen, bearing out what Mr. Tilley said. One I showed before the Scottish Otological and Laryngological Society, in which there was extensive destruction of the interior of the nose by sarcoma. I turned down the cartilaginous part and split the nose in the middle line. The whole nasal cavity was invaded as well as the accessory cavities. This was cleared away to the base of the skull. Although eight years ago, there has been no recurrence. Another case was one of epithelioma of the ethmoid which had invaded the antrum. I operated through the antrum and cleared away the ethmoid by this route, and intranasally. That was at least eight years ago, and beyond a slight recurrence a few months afterwards there has been no further sign of the disease. I have had an interesting case of a malignant polypoidal growth, attached by a narrow pedicle, just in front of the middle turbinate. It was epithelioma. I removed it two years ago and there has been no recurrence.

Dr. IRWIN MOORE: A year ago I showed before the Section the case of a female, aged fifty,² on whom I had recently performed lateral rhinotomy (Moore's operation) for small-celled sarcoma of the antrum. Three months later I showed a second case, in a patient aged sixty-two,³ the growth being epithelioma. In each case the growth affected the right ethmoid region and the anterior wall of the antrum, which was necrosed, the orbital floors being intact. In the sarcoma case the muscles of the cheek were also deeply infiltrated. In the epithelioma case, three months later, I found that the growth had extended under the malar bone into the zygomatic fossa and around the orbit, causing proptosis, necessitating a second operation. In April the eye was removed, since it had become disorganised. This patient died yesterday, just a year after the first operation, and the *post-mortem* examination showed that the growth had extended most rapidly, involved the whole side of the face, the antral and orbital walls, and backward into the sphenoid sinus. There was a large sloughing cavity in the side of the face, into which one could put one's fist. In the sarcoma case the patient is well, and shows no signs of recurrence. These two cases, under observation side by side, are interesting as tending to show the lesser degree of malignancy of small-celled sarcoma in this situation compared with epithelioma.

Dr. DAN MCKENZIE (in reply): I should not be disinclined to operate on a patient of any age. With regard to the question of the mild degree of malignancy of nasal cancers, I generally look upon sarcoma as less malignant, but when I get the name "epithelioma" given me by the pathologist I have more apprehension. The forceps used were Jansen's mastoid forceps.

Excision of the Upper Jaw for Carcinoma of Antrum and Palate, followed by Diathermy.—Norman Patterson.—Woman,

¹ *Lancet*, October 19, 1901.

² *JOURN. OF LARYNGOL., RHINOL., AND OTOL.*, vol. xxxii, p. 102.

³ *Ibid.*, p. 355.

aged fifty-six. Admitted to London Hospital on April 3, 1917. Complained of pain in the mouth for three months. Examination showed two large patches of growth on the right side of the hard palate joined together by a narrow neck; alveolus not involved. The antrum was quite dark on transillumination. Microscopic report by Dr. Turnbull—epithelioma.

Operation, April 5: Preliminary laryngotomy, followed by complete excision of right superior maxilla, including the orbital plate, which was involved. The usual method was employed, omitting altogether the horizontal incision along the lower orbital margin. I consider this incision unnecessary, and by its omission subsequent cedema of the lower eyelid is avoided. By retracting the flap upwards and outwards the orbital periosteum can be separated, and the malar bone divided in the usual situation. The superior maxilla on the right side was found to be infiltrated with growth, and in many places the bone was very soft. The antrum was full of growth.

The patient's condition was rather bad and the operation had to be stopped, although it was quite certain that diseased tissues had been left behind, especially in the ethmoidal region.

A week after the operation the patient developed cellulitis.

April 25 (three weeks after the first operation): The whole surface of the wound was destroyed by diathermy, especial attention being paid to the ethmoidal region.

When seen on October 4 the patient showed no sign of recurrence. She has been fitted with a denture.

Mr. E. D. D. DAVIS: The facility with which intratracheal ether can be given for these cases is remarkable. I have had a number of cases of injury of jaws and face in addition to cases similar to Mr. Patterson's, in which this method of anaesthesia was employed, and the shock after the operation is much diminished; the patients make an uninterrupted recovery, and do well. If this patient had been given intratracheal ether Mr. Patterson would have been able to complete the operation. Laryngotomy can be simple enough, but intratracheal ether is a great comfort to the surgeon.

Excision of the Retro-pharyngeal Gland for Recurring Retro-pharyngeal Abscess of Tubercular Origin.—Norman Patterson.

Boy, aged seven and a half. Retro-pharyngeal abscess, evidently tubercular, opened through the right side of the neck in November, 1915. Seen on March 8, 1917, at London Hospital. There was a large swelling, causing the right posterior pharyngeal wall to bulge forwards and extending past the middle line. A swelling was also present in the upper part of the right side of the neck. Operation was carried out the same day. A long incision, passing through the old scar, was made behind the sterno-mastoid and the abscess evacuated. The dissection was then carried inwards behind the carotid sheath and pharynx, and the retro-pharyngeal gland, which was much enlarged, caseating in parts and in parts calcified, was removed. The abscess-wall was gently curetted and the cavity packed with gauze. Healing took place slowly. There has been no recurrence.

In September, 1917, the patient developed an abscess in the left axilla, and there is now an enlarged gland on the left side of the neck.

Sarcoma of the Antrum.—F. A. Rose.—H. F.—, male, aged sixteen, noticed obstruction of the right nostril in July, 1917; later a

swelling appeared in the alveolus of the upper jaw. When seen in September the antrum was dark to transillumination. Since then the growth has invaded the zygomatic fossa and is increasing rapidly.

Pathological report: Round-celled sarcoma.

Prof. SHATTOCK: We must, of course, beware of errors in pathological diagnosis. The other day I examined a section from a soft tumour of the ethmoid, which had clinically suggested sarcoma: in my opinion it was a papilloma; but others might have regarded it as a carcinoma. Clinical facts, however, are clinical facts.

Dr. WILLIAM HILL: I have treated growths like Mr. Rose's with radium. Although I have seen the antrum apparently clear up and the nose very much improved, every one of my cases has died eventually. In one case the face was bigger than that of Mr. Rose's patient. That swelling went down, but the ethmoid was invaded as well, and although I have inserted radium tubes I have never succeeded. In one case, an old and debilitated subject—on whom, perhaps, I ought not to have tried radium—who came from Australia and whose mind was set on radium, the growth was in the top of the nose and the cribriform was involved. I applied 200 mgrm. of radium bromide. On the second day he had a rise of temperature, with septicæmia, and it was evident general toxæmia had been set up by the action of the radium. He died four days later from what we regarded as perhaps thrombosis. There were enlarged veins inside his skull. Before death he had a high temperature and low, muttering delirium. The dose I gave was not excessive, for only 50 mgrm. was applied to the top of the nose, and it was duly screened. Perhaps one ought to have applied the radium consecutively to various areas. It has been recorded that sometimes radium causes profound toxæmia. I have seen these growths disappear from the nasopharynx without recurrence.

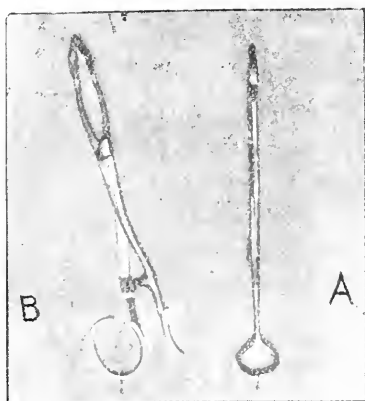
Mr. ROSE (in reply): My own experience does not include any case of round-celled sarcoma of the nose which has run a favourable course as did the two cases mentioned. I have only had to treat three: One was in a child aged four, who died within a year of my seeing him. Another was a child aged about twelve, and then there is this boy, aged sixteen. This boy is moribund, and the swelling in his face, which is so conspicuous, has appeared within the last ten days; in fact, when I first saw him, six weeks ago, there was no external swelling visible at all. Therefore, as my experience of round-celled sarcoma is so unfavourable, I cannot help thinking, when I read and hear of cases which run a favourable course, that two different diseases are called by the same name.

A Tonsil Forceps.—W. H. Kelson.—I have found that in difficult cases of tonsil enucleation, where there is a brittle tonsil to remove, tenaculum forceps, however well made, are unsatisfactory, as they are apt to tear. Therefore for some time past I have used ordinary gland forceps. When one completes the operation with the snare there is no difficulty in getting the wire over the handle, but if the operation is completed with the tonsillotome there is difficulty. I have therefore partly cut away the handle of the forceps on one side, and cut through the loop of the handle on the other, which allows a medium-sized tonsillotome to be easily slipped over the forceps whilst the tonsil is grasped (see p. 171).

Paralysis of the Left Vocal Cord in a Man, aged thirty-nine.
—W. H. Kelson.—Patient, a clerk (passed C1), came to hospital com-

plaining of hoarseness, which he states came on suddenly in September. He gives a history of having had syphilis fourteen years ago. On examination the left vocal cord is seen to be almost motionless, the right coming across to assist when phonation is attempted. The left pupil is rather larger than the right. Examination with X rays shows a distinct bulging in the region of the transverse and descending portions of the aortic arch.

Major WATSON WILLIAMS: Was this patient treated for syphilis? A case which I have illustrated I diagnosed as lupoid tuberculosis of the pharynx, curetted it and applied lactic acid. Then by some accident I gave antisyphilitic treatment, and it cleared up. I ask whether that has been done here, because tertiary syphilis of the posterior wall of the pharynx sometimes strongly resembles lupoid infiltration.



A shows blades of forceps well adapted for securely seizing the tonsil; B shows handles cut away so as to allow of the blade of a medium-sized tonsillotome being passed over.

Lupoid Tuberculosis of the Pharynx, affecting the Soft Palate and Uvula, in a Boy, aged eight, the subject of Congenital Syphilis.—Irwin Moore.—This case, first exhibited at the Sectional Meeting on March 2, 1917,¹ and described in the agenda as “(?) Lymphadenoma,” was again shown at the meeting on June 1, 1917,² as “Lupoid Tuberculosis.” Considerable discussion followed, various opinions being expressed, and objections raised to the term “lupoid.”

When the case was last exhibited the following history had been obtained, and since then certain investigations have been carried out, as follows:

(1) *Enlargement of Glands.*—Patient was first seen on January 16, 1917, suffering from enlargement of the submental, posterior cervical and inguinal glands of eight months' duration. The submental glands, which were matted together, disappeared in six months under potassium iodide treatment. When last exhibited the enlarged discrete glands in the neck and inguinal regions were still present, and had undergone no change.

(2) *Infiltration of the Pharynx.*—When patient was first seen the

¹ JOURN. OF LARYNGOL., RHINOL., AND OTOL., vol. xxxiii, p. 152.

² *Ibid.*, January, 1919, p. 24.

pharynx presented a semi-translucent swelling of the uvula, extending over the greater part of the soft palate: it was solid, rigid, and leathery in consistence. This did not vary in appearance until March 12, two months later, when the infiltration was observed to be gradually extending downwards along the posterior faucial pillars. (Compare condition seen in the water-colour drawing of February 15 with that of March 20.) There had been no signs of ulceration or miliary deposit.

(3) The *Tonsils*¹ were not enlarged. The microscopic sections of the *adenoid tissue* removed from the nasopharynx on February 14 "show a certain amount of fibrosis with chronic inflammatory reaction which is characterised by the formation here and there of cellular systems, which occasionally have a central multinucleated giant-cell. The lesion is undoubtedly tuberculous" (Dr. Eastes' Laboratory).

For a later opinion see Prof. Shattock's report, pp. 173 *et seq.*

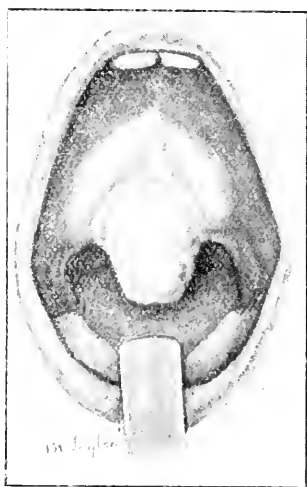


FIG. 1.

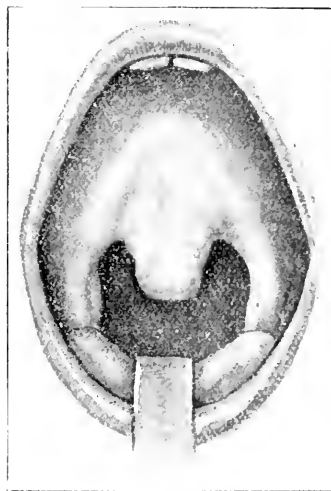


FIG. 2.

FIG. 1.—Lupoid tuberculosis of the pharynx affecting the soft palate and uvula in a boy, aged eight, the subject of congenital syphilis. Case shown March 2, 1917. Drawing made February 15, 1917.

FIG. 2.—Shows the infiltration extending downwards on to the faucial pillars and tonsils. Case shown June 1, 1917. Drawing made March 20, 1917.

(4) *Examination of the Larynx* on March 24 by Killian's suspension apparatus, with the co-operation of Mr. E. D. D. Davis, showed œdematous infiltration of the epiglottis and arytenoids, but no signs of ulceration. No difficulty in breathing has been observed.

(5) *Examination of the Lungs*.—No history of tuberculosis and no pulmonary signs were present until March 10. On this date (a) *clinical examination* (Halls Dally) revealed scattered fine moist crepitations over the whole of both lungs. At this time a slight cough, night-sweats and slight rise of temperature were present. The child was losing flesh in spite of his appetite being good. (Note: Patient's usual weight,

¹ Since this case was shown both tonsils have been enucleated. Sections have been cut and searched for tubercle bacilli, with negative result, but typical giant-celled systems were present.

3st. 8 lb., does not vary much.) (b) *Radioscopic examination* (H. D.) showed no enlargement of hilar glands, no peribronchial striation, and no enlargement of the tracheo-bronchial glands. No tuberculous foci in lung-tissue. (For a later examination see further report below.)

(6) *Blood Report*.—"Showed on February 16 that it was not typical of any exact condition; it indicated a mild anæmia of secondary type with leucocytosis. Leukæmia may be excluded" (Dr. Fletcher, Dr. Eastes' Laboratory). On March 10: "A slight leucocytosis; the lymphocytes were within normal limits, but a little on the high side. The Arneth count is low" (Halls Dally).

The following additional investigations have been carried out since this case was exhibited on June 1 with the kind assistance of Prof. Shattock, Dr. Halls Dally and Dr. A. N. Leatham:

(1) Two independent authorities (Dr. Eastes' and Mount Vernon Hospital Bacteriological Laboratories) have found (June 8 and July 6, 1917) *strongly positive Wassermann reaction*, and the parents have admitted infection with and treatment for syphilis.

(2) Dr. Halls Dally has shown (July 16, 1917) by radiograms recent *enlargement of hilar glands* with associated *peri-bronchitis tuberculosa simplex*, and will demonstrate this at the meeting (radiogram of chest will be shown).

(3) A definite *tuberculin reaction* was obtained on June 26, after diagnostic injection of 0.001 c.c. O.T., the temperature rising from normal to 101.2° F. (H. D.), whilst a few days later it was observed that the soft palate looked pinker and more normal. On palpation marked softening of the infiltrated palate was observed, probably the result of the tuberculin injection (temperature chart will be shown).

(4) *Blood Examination*.—The first Arneth count on March 10, 1917, showed: Cells of group I, 8 per cent.; cells of group II, 44 per cent.; cells of group III, 39 per cent.; cells of group IV, 9 per cent.; cells of group V, 0 per cent. Total nuclear bodies, 249, as against normal, 275, this being distinctly on the low side and suggestive of tuberculosis. The second Arneth count on July 3, 1917, showed: Cells of group I, 9 per cent.; cells of group II, 50 per cent.; cells of group III, 0.34 per cent.; cells of group IV, 7 per cent.; cells of group V, 0 per cent. Total nuclear bodies, 239, being a still lower count, which is still more in favour of tuberculosis (Halls Dally).

(5) Histological report of the microscopic sections of uvula, etc., submitted to Prof. Shattock:

(a) *The Uvula* (removed June 29).—The basis or ground substance of the section consists of a felt-work of fine undulating fibrils, amongst which there lie flat connective-tissue corpuscles furnished with large oval nuclei. In places the mesh of fibrils is abnormally open from œdema. Many of the capillaries show pronounced endothelial proliferation, some of them being quite blocked with the cells (Fig. 3). The proliferated cells are large and flat, and notable numbers of lymphocytes occur amongst them, but no polymorphs. In the groups there occur a certain number of multinucleated cells: these have mostly but few nuclei (Fig. 4); in one occluded vessel, however, a multinucleated cell holds nine, and these are peripherally disposed (Fig. 5). Distributed through the connective tissue are groups of closely-placked plasma-cells and lymphocytes; none of the groups in the two sections examined include any giant-cells. The relationship of some of these groups with capillaries is clear, for they lie in their immediate vicinity. The capillaries

in which endothelial proliferation is proceeding may be regarded as lymphatic, from their size (they are larger than the blood-capillaries) and varicosity, and because those of chief size which contain a fine mesh of fibrin in addition to endothelial cells and lymphocytes show no red cells nor polymorphs entangled in the mesh. The arterioles throughout the section are quite normal. The investing epithelium of the uvula is intact. The muscle-fibres are unaffected. In regard to the glands the epithelial tissue is normal, but there is an abnormal number of



FIG. 3.—Section of uvula, showing lymph-vessels occupied with varying numbers of proliferating endothelial cells, and lymphocytes, lying in a connective tissue infiltrated with lymphocytes and plasma-cells ($\frac{1}{2}$).

cells, lymphocytes and plasma-cells in the supporting connective tissue. Histologically, the lesion of the uvula is a capillary lymphangitis with an accompanying cedema and the presence of groups of plasma-cells and lymphocytes in the connective tissue (S. G. Shattock).

No tubercle bacilli nor other organisms were found in a number of sections of the uvula stained (A. N. Leatham).

(b) *The Adenoids* (removed from the nasopharynx on February 14).—The section contains typical tubercular giant-cells of full size, but by the side of such are others isolated in fibrosing tissue, which include only a few nuclei. No caseation is present. The endothelial cells around the giant-cells are mostly elongated and fibroblastic (S. G. Shattock).

(c) *The Cervical Gland.*—This contains one or more caseous foci in which chromatolysis has occurred; these are surrounded with well-advanced fibroblastic tissue; the giant-cells lying in this fibrosing zone are few, but some are quite typical of a tubercular lesion (S. G. Shattock).

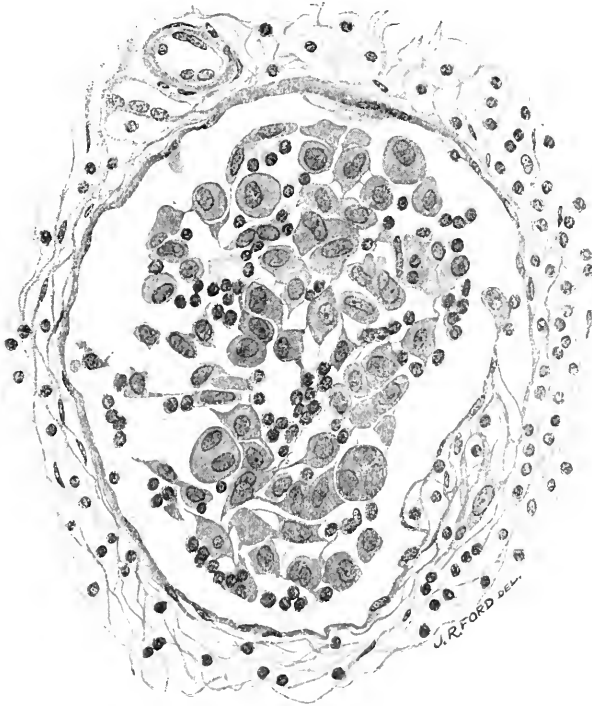


FIG. 4.—A transverse section of one of the lymph-capillaries shown in the preceding section ($\frac{1}{6}$). Some of the proliferating endothelial cells contain two or three nuclei. Amongst the cells are a certain number of lymphocytes.



FIG. 5.—A multinucleated giant-cell, selected from a group of proliferating endothelial cells in a lymph-capillary. It contains nine nuclei disposed peripherally ($\frac{1}{12}$ oil immersion).

(d) *The Inguinal Gland.*—The section shows areas of endothelial proliferation, but no giant-cells. There is no caseation (S. G. Shattock).

These lymphatic glands were kindly removed for me (during my absence) for microscopic examination on July 20 by Mr. Norman Patterson

(6) *Inoculation of Guinea-pig*.—Report: The surface of the piece of tissue was sterilized by careful searing. The tissue was then minced and implanted subcutaneously into a guinea-pig. The guinea-pig was inoculated on July 13 and killed on October 16, and showed no signs of tuberculosis, either at the seat of inoculation or elsewhere. The guinea-pig weighed 650 grm. at the time of inoculation and 870 grm. when killed (A. N. Leatham).

Note.—With regard to the title of this case, *i. e.* "Lupoid Tuberculosis," the term "lupoid" was employed to differentiate these cases intermediate in degree between the two types of tuberculosis and lupus—*i. e.* to describe the clinical appearance—viz. a deep infiltration of a lupus character, showing no evidence of miliary tuberculosis or ulceration. The retention of this title has since been approved by Prof. Shattock.

I suggest that it would be more accurate to describe the case as "Primary tuberculosis of the nasopharynx and pharynx, in the latter position being of a lupoid type, and affecting specially the uvula and soft palate."

(To be continued.)

Abstracts.

NOSE.

Report of Interesting Nasal Cases due to Syphilis: Remarks on Obscure Syphilitic Nasal Symptoms.—Dunbar Roy. "Annals of Otology, etc.," vol. xxvi, p. 967.

Three cases are reported. The author deprecates too great dependence upon the Wassermann reaction as a final test to the exclusion of clinical observation. He urges the importance of syphilis as the fundamental cause of many obscure rhinological conditions which resist ordinary treatment. The cases reported are too long and complicated adequately to bear condensing.

MacLeod Yearsley.

LARYNX.

Contusion of the Larynx.—Drs. Thollon and Labernadie. "Rev. de Laryngol.," July 31, 1918.

The writers have seen only four cases of the above condition during two years in which they were in charge of an oto-rhino-laryngological centre in the French Army. In every case there was a superficial through-and-through wound of the front of the neck which did not penetrate any of the laryngeal structures. The patients had complete aphonia and gave a history of sensation of a blow at the time of the wound, immediately followed by hoarseness. There was no dyspnoea, and only slight dysphagia in one case which lasted one day. X ray showed no foreign bodies. The appearances seen were a bluish submucous ecchymosis of the lateral pharyngeal wall, extending up beyond the palate

and down into the space between the tongue and epiglottis. In all cases there was a bluish swelling of the ventricular bands of varying degree. In one case one ventricular band protruded into the cavity of the larynx, hiding the greater part of both cords. On attempted phonation the arytaenoids did not come into accurate apposition, probably owing to paresis of the interarytaenoid muscles. There was no exudate. The lesions disappeared and the voice returned by about the twentieth day. The condition was probably caused by the missile giving the thyroid cartilage a glancing blow and nipping the soft tissues between the latter and the vertebral column.

J. K. Milne Dickie.

MISCELLANEOUS.

Status Lymphaticus.—Douglas Symmers (New York). "Amer. Journ. Med. Sci.," July, 1918.

Status lymphaticus may be defined as a combination of hereditary constitutional anomalies, entering into which are certain peculiarities of configuration, with preservation or even hyperplasia of the thymus gland at an age when involution is to be expected, hyperplasia of the lymphoid cells in the lymph-nodes, spleen, intestine and elsewhere, hypoplasia of the cardio-vascular system, developmental deficiencies in the genitalia, and incidently, visceral defects of uncertain occurrence and irregular distribution. It is compatible with life, but is nevertheless a menace because it is attended by instability of the lymphoid tissues, providing a mechanism which is capable of so sensitising the body as to produce anaphylactic phenomena varying in intensity from simple urticarial rashes to convulsive seizures or sudden death. The same irritability of the tissues is apparently responsible for the lowering of the threshold of infection, particularly of those infections which gain entrance through the pharyngeal and faucial tonsils and the intestinal tract. It is also a menace because it is attended by defective development of the muscular coats of the arteries, thus rendering them incapable of withstanding changes in blood-pressure which, in ordinary circumstances, are lightly borne. Among 4000 autopsies at the Bellevue Hospital 249 cases of this nature were recognised. The sex proportion was six males to one female. The age varied from under one year to over sixty, the greatest number belonging to the third decade. Two types are recognised—namely, status lymphaticus proper, and recessive status lymphaticus; the latter is marked by atrophic changes of greater or less degree in the lymphoid structures. In no case did an enlarged thymus appear to have been a mechanical factor in the production of death. In the 118 cases of well-developed status lymphaticus the faucial tonsils were hyperplastic in 51 per cent., the lingual tonsils in 49 per cent., and the pharyngeal tonsils in 37 per cent. The lymph-nodes showed the presence of greatly increased numbers of lymphocytes, and in a majority of cases, but especially often in subjects who had died suddenly and in response to apparently trivial provocation, the lymph-nodes showed a peculiar necrotic change in their germinal areas. Sudden death in this condition is probably in some cases connected with the release of nucleoproteids formed as a result of destruction of innumerable germinal follicles. That acute necroses may occur in irregular showers is shown by the presence of all stages of both necrotic and reparative processes

in the same lymph-node. It may be supposed that the anaphylactic reactivity of the body is determined by the number of acute necrotic lesions in the germinal follicles, or, in other words, that the incubation period in man, as in experimental animals, varies with the initial dose of the sensitising period. It is naturally to be expected that early sensitisation follows a small shower of necroses, and that larger showers are succeeded by longer periods of incubation. At one moment the tissues are exquisitely tuned and await only the receipt of a sufficient quantity of specific protein to react violently, even to the point of sudden death, while at another moment events are so timed that the same quantity of specific protein exerts no such effect—a fact which tends to explain why certain subjects of status lymphaticus survive surgical and other procedures which, in others, are attended by disaster. In this instance it is apparently a question of anaphylactic reactivity dependent upon the number of acute necrotic lesions in the lymph-nodes, and upon the interval which has elapsed since their inception. Hypoplasia of the cerebral vessels is also of great importance in relation to sudden death in status lymphaticus. It was the cause of death in seven of the 249 cases. Lastly, the writer's statistics indicate that the subjects of status lymphaticus are peculiarly susceptible to a number of acute infections, and show comparatively little power of combating such infections.

Thomas Guthrie.

Speech Defects: Stammering.—Kenyon. "The Laryngoscope," September, 1918, p. 666.

Stammering is distinguished by emotional disturbance accompanied by a distressing spasmodic abnormality of action of the peripheral organs of speech. Under present conditions opportunities for treatment are utterly inadequate. Lay efforts cannot be depended upon to solve the problem because of the narrowness of lay knowledge. Medical efforts sometimes also fail for the same reason. The problem can be completely solved only by physicians especially educated and trained for the work. Medical specialists and well-educated laymen must work in harmony. Provision for the education of both physicians and laymen must be provided at large medical centres. The solution is probably a system of prophylaxis and treatment applied in the public school. Treatment rests on the principle of educated self-control, *i. e.* control of the peripheral speech mechanism and of the emotional and nervous disturbance. The period of treatment varies greatly. In difficult cases it must extend through many months.

J. S. Fraser.

Technique of Plastic Surgery of the Face.—Frank. "The Laryngoscope," August, 1918, p. 565.

The author remarks that trench warfare has brought into prominence the need of plastic surgery owing to the production of a large number of mutilating wounds of the face involving great loss of substance of soft parts and bone. Men returning to-day as soldiers with deformities are hailed as heroes, but later, unless skilfully treated, they will become objects of pity. The first operation should consist in a complete trimming away with scissors of the sloughing area of the ragged wounds, preserving as much normal tissue as possible and bringing the edges loosely together with sutures. The time for further operative interference differs, depending upon the character and the cause of the defect. In civil life cases usually come long after the accident with scar-formation and

consequent deformity, but minus the greatest foe to surgical success—infection. After making a proper survey of the defect to be covered, and forming a good general idea of the plan to be followed, it is best to employ clean-cut incisions where possible in the natural folds of the skin and obliquely rather than at right angles, as the scar is less prominent and apposition more perfect. A good safe rule to follow is to make the flap one-third larger than the defect to allow for shrinkage. The blood-supply of the flap is of the utmost importance. A sharply-twisted pedicle will severely jeopardise the life of the flap. We should have no hesitancy about performing numerous operations upon the same patient if the desired result is to be obtained. Plastic surgery at best is an art requiring a delicate technique. The chances of success will be very much enhanced by the employment of aseptic measures. For this reason we must endeavour always to produce complete hæmostasis. To relieve tension the chief support is given by deep nickel-wire sutures, which should not pass through the mucous membrane. They are placed from one to one and a half centimetres apart, and tied so tightly (over plates placed on sound tissue) that all strain is taken off the superficial sutures. For simple appositions the smallest suture material obtainable should be used. Frank approves of horse-hair. When both the skin and mucous membrane are wounded at the same time, separate sutures are required. It is a good plan, especially in superficial wounds, to remove the sutures early. It is the practice at the present time abroad to use the open method of treating wounds where there is no special reason for bandaging. The skin thus remains dry, diminishing the growth of bacteria and preventing infection.

J. S. Fraser.

Nitrous Oxide and Oxygen in Combination with Ether or C.E. Mixture for Nose and Throat Operations.—H. E. G. Boyle. "British Medical Journal," December 21, 1918.

With his technique the writer claims infinitely better results than those obtained by older methods.

After preliminary morphine-atropine injection, the patient is anæsthetised with nitrous oxide and oxygen, with re-breathing, and, just as anæsthesia is commencing, the gases are allowed to run through ether or C.E. mixture until the requisite depth of anæsthesia is obtained. The face-piece is then removed and the combination mixture continued through a tube by the nose or mouth. Administration need not be continuous, and only a small quantity of C.E. or ether is necessary.

Some experience is required before the method can be mastered, but it possesses great advantages, and has been successfully used in over 3000 cases in the writer's experience, with no mortality.

It has been observed that—

(1) Complete relaxation of the jaw is obtained even in muscular subjects, and also relaxation of the soft palate.

(2) Swallowing and cough reflexes are easily abolished, but are restored almost immediately on withdrawing the anæsthetic.

(3) Bleeding appears to be less, both during and after the anæsthetic, than with other methods.

(4) The rapid recovery of consciousness after operation is a point of extreme importance, for one never sees patients lying after the operation in that deep unconscious state that so frequently follows chloroform administration, but on the contrary they are conscious in a few minutes, have a good colour and are well.

Douglas Guthrie.

CORRESPONDENCE.

"THE CONSERVATIVE MASTOID OPERATION."

*To the Editor of THE JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND
OTOLOGY.*

SIR,—I have read your review of Mr. C. J. Heath's book, "Otitis Media." The impression it leaves with me is, that you have not given it enough study before writing.

Your review, professing to deal fairly with "Otitis Media," deals vaguely with such a lot besides the statements in that book that this, combined with inaccuracies in your criticisms, compels me to say that my faith in Mr. Heath's teaching is as yet unshaken. I have read the book over and over again, and I cannot find any statement in it to justify your opening sentence, that "Mr. C. J. Heath expresses surprise, . . . that in a certain modern text-book on Otology no mention whatever is made of his 'Conservative Mastoid Operation.'"

Taking the inaccuracy of this opening sentence and hanging on it your concluding gibe, I laid your review down with my faith shaken in the disinterestedness of some scientific spirits.

Further, I do not see why Mr. Heath should complain that text-books ignore his operation, for it results in a large number of surgeons requesting his permission to see him operate, and some of them I have met there are at the top of the profession.

Then, again, in the middle of your review you say: "Does he, then, say that it is suitable for every variety of middle-ear suppuration." In "Otitis Media" Mr. Heath plainly states that his treatment is for the "early cases only," in order to preserve the hearing before the apparatus of the ear is irreparably damaged.

Mr. Heath's operation and treatment was founded on his pathology; each confirms and justifies the other.

Further, there was no place for such an operation as a standard procedure until Mr. Heath laid down the foundation for it—that is, the proof that the antrum is practically always the chief seat of the disease in early chronic, i. e. non-acute cases.

Having been an army surgeon, I have seen the disastrous results of the treatment advocated in text-books. The results I have hitherto seen of Mr. Heath's methods of treatment encourage me to continue them.

I am, etc.,

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MORELL MACKENZIE, THE FATHER OF BRITISH LARYNGOLOGY, FOUNDER OF "THE JOURNAL OF LARYNGOLOGY."

BY JAMES DONELAN, Ch.M., M.B.,

President, Section of Laryngology, Royal Society of Medicine;
Officer-Chevalier of the Crown of Italy, etc.

THE very successful first Summer Congress of the Section of Laryngology, suggested by my predecessor in office, Dr. A. Brown Kelly, of Glasgow, has just ended its meetings, and has fully justified his forecast of its scientific value to laryngology and its allied studies. It has been largely attended, not only by its London and provincial members, but by several distinguished visitors—Belgian, American and Colonial. I have myself had the great pleasure of being able to offer my place in the Chair, with the cordial approval of the Section, in token of our admiration of the valiant deeds of Canadians in the war and as a mark of affectionate esteem, to the eminent Canadian laryngologist, Brigadier-General Birkett. To his conduct of the scientific meetings much of the success of the Congress is due.

On such an occasion, when British laryngology is taking a fresh and more independent orientation, it is felt that some account of the life and work of the Father of British Laryngology may be a not unwelcome contribution to the literature of the Summer Congress. As I was Morell Mackenzie's private assistant during the years 1887-92—the most critical part of his career—and as I had helped in the revision of the greater part of his previously published work, as well as in that which appeared during those years, it has been suggested by several members of our Section that I should undertake to write this memoir.

Morell Mackenzie was the elder son of Dr. Stephen Mackenzie, of Leytonstone, Essex, where Morell was born on July 7, 1837. Although he was English on his mother's side, those who knew him intimately enough to hear him speak with pride of his descent from a famous Highland clan felt he was a Celt of Celts, who, as Stevenson says, "remembers and cherishes the memory of his forbears, and there burns within him a sense of identity with the dead even to the twentieth generation." Stress is laid on this descent, for it appears to have been the key to the development of his character, as shown by his warm affection for family and friends, his spirited perseverance in spite of the

greatest difficulties when once his pride, his ambition or even his resentment was sufficiently roused.

Morell Mackenzie received his medical education at the London Hospital, and took the M.R.C.S. in 1858. In 1859 he studied in Paris and Vienna, but becoming acquainted with the writings of Johann Czermak on the use of the laryngoscope, Mackenzie recognised the importance of Czermak's systematic clinical use of the hitherto little-availed-of invention of Dr. Benjamin Babington,¹ of Guy's Hospital, and early in 1860 went to Buda-Pesth, where he worked under Czermak. He returned to the London Hospital and graduated in the University of London in 1862. The following year was a critical one, as it was in 1863 that he won the Jacksonian Prize of the Royal College of Surgeons for an essay on "The Pathology of the Larynx," and marked his decision to specialise in laryngology by founding the Hospital for Diseases of the Throat in Golden Square. He was appointed Physician to the London Hospital in 1866, and retained that office until 1873, when his devotion to his specialty and his already immense practice obliged him to resign. The Throat Hospital, or, as it is best known to laryngologists, "Golden Square," was, I believe, the first institution in the world wholly and specially devoted to the objects of our study. It is therefore justly regarded throughout the world as the Mecca of laryngology.

A great scientific teacher has often said to me that a man writes a text-book on his own subject when he is learning it himself,² and Morell Mackenzie used to say it was as legitimate a way of making an honest penny out of one's notes of other men's books as any other. That could not be said of his own published work or of any other that is the result of genuine experience. If "Diseases of the Throat and Nose" has not attained to succeeding editions it was because it did not appear until after twenty years' unremitting study and research in an unrivalled field of experience, and because its author was cut off untimely while preparing the second edition, which would have contained much new matter and some corrections.

"Diseases of the Throat and Nose" was commenced in 1872, and the first volume was not published until 1880. The author explains the slow progress by the many calls on his time, and by the changes due to the rapid development of a new specialty. The second volume was not completed according to his design, as the section on "Diseases of the Neck" had to be omitted. Nevertheless, the work as it stands not only covers the whole field of our specialty as it appeared at the time of publication, but anticipates by its suggestions many advances that owed their inspiration to them. The references compass the history of our study from the earliest records up to about the year 1884. It is not a dead bibliography, however, for the views of almost every writer of importance are quoted and commented on. Scarcely any writer is omitted—certainly none intentionally—for he would never let his sometimes strong personal dislikes interfere with scientific truth, nor would he, as he often said, "make so much of any man as not to mention his product."

The first research work I did for Morell Mackenzie, when, in addition to my general practice, I became his assistant in 1887, was to bring up to date his chapters on "Goitre," which were to have formed part of the section on "Diseases of the Neck." These he had now decided to

¹ *Hunterian Society's Transactions*, March, 1829.

² I have been informed that this phrase occurs in a speech of Edmund Burke, but I have not had an opportunity of getting the reference.

publish as a separate essay. They then existed only in a single set of galley proofs. When I referred to them in the address I read at the opening of this Session they were supposed to have been lost, but, I am glad to say, they were lately found, and form part of the "Relics of Morell Mackenzie" in course of presentation by Mr. Mayer, of the firm of Mayer & Phelps, to the Royal Society of Medicine through the Section of Laryngology.

I was much interested during my visits to the Congress Museum, so admirably organised by Dr. Irwin Moore, to see these slips after thirty-two years, and I was gratified to find that my recollection of Mackenzie's views on the aetiology was confirmed by the text and the pencil notes I made in accordance with his suggestions. He did not limit his view to geological peculiarities, but, largely on evidence furnished by Indian medical friends and other observers, whose letters are also preserved in this collection, had come to the conclusion that the cause of the disease would be found to be water infected by the excreta of goitrous persons. This was brilliantly demonstrated by MacCarrison in his book published in 1917.

It was also in the year 1887 that Morell Mackenzie founded the JOURNAL OF LARYNGOLOGY in association with Dr. Norris Wolfenden. Its foundation marks a distinct effort on the part of Morell Mackenzie to put British laryngology as a distinct speciality on a truly scientific basis by the establishment of a medium in which new advances could be immediately brought forward and, together with older views, be fully and freely discussed. It is unnecessary to insist here on the great services it has rendered to our branch of science during the thirty-two years of its existence.

It is of interest to recall the excellent pioneer work recorded by Mackenzie in the second volume of "Diseases of the Throat and Nose" in relation to œsophageal diseases. The results of his investigations, with very imperfect means in a large number of cases, have a permanent value even in these œsophagoscopic days.

In his preface to this second volume Mackenzie's always ready gratitude to those who rendered him assistance of any kind is pleasant to recall at this distance of time. He especially thanks Mr. C. L. Taylor, afterwards so long sub-editor of the *British Medical Journal*, for "his invaluable help," and Mr. Mark Hovell for the indices to both volumes. The book was translated for simultaneous publication in Germany by Dr., afterwards Sir Felix Semon, and Mackenzie says that "it is a source of much gratification to me that my labours should be made known to my fellow workers in Germany by so able an exponent."

Mackenzie's other works are the series of essays on throat diseases, including "Hoarseness, Loss of Voice and Stridulous Breathing in Relation to the Nervo-muscular Affections of the Larynx." "Growths in the Larynx" will, I think, always be the universal classic of that subject, although somewhat marred by the unfortunate tone of the Durham controversy. Other essays were: "Diphtheria, its Nature and Treatment," "The Use of the Laryngoscope," and "Hay Fever." There was also "The Hygiene of the Vocal Organs," a work on popular lines, in which Mackenzie discussed at considerable length the vexed question of the registers and of voice production, laying about him with more than all the freedom of medical controversy of earlier days. This work had an immense popularity with teachers and singers as long as it was published—indeed, I may say longer, for the unbound copy which we used for the revision of 1889, and which Mackenzie presented

to me with an autograph word of thanks, was stolen from me under the very eye of Judge Darling when I appeared in his Court as a witness in the voice case of Horspool v. Cummings.

Mackenzie's more scientific writings were received most favourably by the medical profession and press throughout the world. Space does not allow me to quote generally from the chorus of approval. I will give only a few sentences from some German reviews of "Diseases of the Throat and Nose." It should be recalled that the book was anxiously awaited in Germany, where for many years Dr. Semon's translation provided the standard, and indeed the only, text-book of our subject.

The *Deutsche Archiv für klinische Medizin* wrote: "The publication of this present work has gratified a wish that has long been felt and we hardly know which most to admire—the vast opportunities for observation which the author has enjoyed, or the thoroughness, diligence and impartiality with which he has handled the voluminous literature of the subject."

The *Wiener medizinische Presse* said: "It is impossible to deny that Morell Mackenzie is one of the most distinguished writers on diseases of the larynx. . . . To a clinical experience of quite exceptional range he adds an unusually wide acquaintance with medical literature, and he has not only the power of giving clear and logical expression to his ideas, but the far rarer gift of being able ungrudgingly to do full justice to the labours of his fellow workers."

Fas est et ab hoste doceri! And yet it was those same Germans who, by a piece of vindictive propaganda, a kind of pseudopod of the great slimy system the true nature of which we are only now beginning to fully appreciate, strove to drive from our profession a man who is one of the glories of British science. Of that propaganda the Royal College of Physicians has the misfortune of having been the tool; Morell Mackenzie was its unlucky victim.

It should not be forgotten that Morell Mackenzie founded the first British society devoted to our specialty, if not the first of all. I may even take a tiny modicum of credit to myself for frequently urging him to do so after his return from Germany. At the risk of resembling that character of Jules Claretie who turned a funeral appreciation into a criticism I may say that I felt he needed something of the kind, and that it would do him good just then to come in contact with other views of his own subjects. I suppose it was in Germany he got some peculiar notions of what such a society should be—a sort of proprietary regiment of which he would be the colonel and have the exclusive right to appoint the officers, the outstanding rôles in a chorus of respectful admirers. He was very quickly disabused. Though he took it as a sportsman and in excellent part, I well remember his look of surprise when at one of the first meetings, he being in the chair, his views were directly countered by Dr. Edward Woakes in the most uncompromising fashion, followed in his most seductive tones by Mr. Lennox Browne on the same side.

Some doubts have been industriously circulated of the value of his statistics, but these are founded on hearsay records of the gossip of the party hostile to him in the College of Physicians, or on the hastily compiled statistics of cancer operations, for which he was not directly responsible, in his ill-fated book on the case of the Emperor Frederick. The best test of the statistics in his scientific writings is that they have been confirmed by modern figures. Indeed, the most remarkable thing

about all this pioneer work is that it forms not only a very large part of the foundation of the universal knowledge of our subject, but that his views and conclusions have stood the test of time, and have been so little affected by modern progress or even improved statistical research. People who indulge in cheap or ill-natured criticism of his work forget that in our department of study he occupies an analogous position to that of Harvey, Newton or Pasteur in other fields of fundamental pioneer research. I have often been amused to notice that some of those who criticise him are amongst the first to quote him when they have the good fortune to find that their views can lean on his. It has also been said that, especially in his latter years, he did not keep case-notes. From my own personal knowledge I can say this is simply not true. As in most other practices the bulk of his cases were of no special interest, but even of these he kept a record of the names, dates when seen, treatment ordered and results in great case-books ruled with appropriate columns. He also made special notes of cases of exceptional interest, some of which have been found amongst his scientific papers recently, although the bulk of his case-notes, being of a confidential character, were very properly destroyed after his death. The card-index system, although known to the Babylonians, did not appeal to him, and the letters related to the cases were not therefore kept in the same "dossier" and were not readily available for reference, but how many great men of his day and even in the same department of practice had anything better? There is good reason for attributing many of the professional faults, neglects and discourtesies of which he has been accused to the imperfect organisation of his work. From a fairly close observation of the man during four and a-half years I believe they were greatly exaggerated. One of the things that contributed to get him into hot water with his *confrères* was his old-fashioned notion that he was bound to attend personally to every detail of his patient's examination and treatment. His practice had become too quickly enormous for him to organise it properly (even if he were a sufficiently good organiser and sufficiently trustful) as a practice on such a scale should be worked—by a staff of qualified assistants with himself as consultant and operator. In the management of a practice that was probably unique in its magnitude, any defects, neglects and oversights were bound to be multiplied, and there were never wanting those ready to place such incidents in the worst possible light.

Another thing that was against Mackenzie was his poor health. The wonder is not that he accomplished so much but that he was able to accomplish anything at all. From the age of eighteen years he had suffered from a severe form of spasmodic asthma. As he grew older he often could not bend over a desk to write the shortest letter or even a prescription. For this reason, and as he disliked the typewriter, his private secretary, Mr. Nainby, had brought the natural resemblance of his handwriting to that of his chief to so close a point that, except for those very familiar with the minute differences between the hands, it was impossible to tell which had written any given letter. It was amusing sometimes to hear Morell Mackenzie, who detested the casual autograph hunter, say in his dry way to Mr. Nainby: "Before you go away you might leave me a few of my autographs." The genuine autographs have the appearance of having been written with a finer-pointed as well as more flexible pen and there are comparatively few specimens. Another amusing illustration of this occurred in the correspondence with the Empress Frederick about the book "Frederick the

Noble," in the writing of which she had a much larger share than is generally known. On one occasion a letter of hers had to be answered immediately and Mr. Nainby not being just then available Mackenzie had to write his own letter. The result was a request from the Empress that Mackenzie should not again employ a secretary in writing to her, and that he should, *as hitherto*, write himself.³

It has been suggested that while Mackenzie was ready for the sake of one of his sons to place his services at the disposal of the theatrical profession he was not equally generous to others, and there is in particular a story of a poor curate who, in the hope of getting rid of his clergyman's sore throat by the expensive skill of Morell Mackenzie, had practised such self-denial in food that he died of an empty belly just as he was about to fill a country church with his restored eloquence. His sore throat must have been bad indeed if it reduced him to the condition of the dumb priest who missed his offering, for Mackenzie was always ready to waive fees—too ready, many people, including his heirs, would say—on a hint that such a course would be desirable. I remember seeing a great many clergymen of all Christian denominations as well as Jews who were on Mackenzie's gratuitous list. Against this story may be set another of which I have seen the related correspondence. A clergyman had been treated gratuitously for some months and then in some temporary difficulty borrowed £50 from Mackenzie. He repaid £15, and after an interval wrote apologising for the delay in sending the balance on the ground that he had been getting married. Mackenzie at once wrote (it is one of the genuine autographs), and, releasing him from the debt, begged him to buy a wedding present instead of making further payments. On the other hand, Mackenzie from time to time received very handsome fees by way of honorarium from eminent actors, and this partly in recognition of his services and kindness to their poorer brethren.

No memoir of Morell Mackenzie could omit all reference to the case of the Emperor Frederick or to Mackenzie's ill-starred book, "Frederick the Noble." The illness became what the lawyers would call "a leading case" in our specialty. The unlucky patient's sufferings were not in vain, for there is no doubt that the publicity of the case led to more careful attention being given to cancer of the larynx, whereby improvements in early diagnosis and treatment were made from which many persons afflicted with this most distressing but fortunately rare disease have greatly benefited. In particular the operation of thyrotomy, or, as the Germans call it, laryngo-fissure, which was so fatal a procedure at the time it was "planned to be performed" in the case of Frederick, has been now brought to such perfection that it is one of the simplest surgical operations, and, if done in time, one of the most successful in eradicating the disease. We can see now that Morell Mackenzie erred, though quite honestly like many another before and since, in trusting too much to the microscopic proof of the absence of cancerous elements, and that, as writer of the present day has frequently pointed out, the *flair* of the physician can never be wholly set aside for laboratory methods even when carried out by so great an authority as Virchow was at that time.

³ It may be of interest to mention at the present time that in the autumn of 1888 Morell Mackenzie, talking to me about the Crown Prince, said: "Just fancy! they have put him up to ask for Heligoland. He says he wants it for shooting sea-gulls. Believe you me, I may not live to see it, but you may; if they get Heligoland they will turn it into a Gibraltar against this country!"

As regards the book there is no need to fear to speak of it. I do so, however, because there is much to be said for the author in regard to it. He had been bitterly attacked, not so much in the professional journals as in the lay press of Germany, especially its reptile section. He was assailed not only in his professional but in his private character: his good Scottish ancestry, of which, as already remarked, he was justly proud, was turned into derision: his very name was said to be false, and that he was Moritz Markovitch, from Danzig. Many of these attacks were reproduced, though in a guarded manner, in papers of similar class here, which were doubtless even then part of that systematic propaganda from which this country has had so bitter a lesson. In other countries, where it could be done safely, similar agencies took up the fire of calumny without restraint. In addition to all this, a hostile pamphlet was issued from the German Imperial Press at the instigation of Bismarck and the last Kaiser, who were beginning to shed those crocodile tears we now know so well for the loss of Germany's liberal Emperor.

What could one man do against an Empire, and that one in which propaganda in the form of calumny or laudation had been cultivated almost as a fine art? Amongst the "Mackenzie Relics" shown by Messrs. Mayer & Phelps at the Summer Congress was the draft of an article written by me from materials supplied by Morell Mackenzie. This was to have been sent to some professional friends of Mackenzie in Sweden for publication in Germany. I do not, however, now remember whether it ever appeared there.

But it was only at home and amongst his own countrymen that Morell Mackenzie could be effectively wounded, and the ground had been carefully prepared by a few bitter personal enemies, some of whom owed their start in life and much of their success to his generosity. Whispered stories had been circulated until honourable men, incapable themselves of such conduct towards a professional rival, were forced to believe the worst. The calumny grew during the Crown Prince's illness like the *venticello* of Basilio's song, rushing and roaring through our profession, until it attained the *colpo di cannone* on the appearance of "Frederick the Noble." It was in the College of Physicians that Mackenzie's character had been most carefully undermined, and his daring to reply, and in such a manner, to the bitter attacks of his German opponents was the unpardonable offence.

But no man, not even a Brahmin of the College of Physicians, should be expected to give up his right to reply to such an onslaught as had been made by these Germans in the most disgraceful and unprofessional manner against the professional and private character of Morell Mackenzie. The tone of the book leaves much to be desired: yet he was not writing a staid treatise, but a justly angry defence of himself. Above all, as a strong minority in the College urged on his behalf, he was a seriously-ill man while he was writing it. I shall never forget that spectre of himself that returned from Germany after two years of acute anxiety, with all the irritability of worn-out nerves to aggravate the almost constant attacks of asthma, for which he was obliged to inhale the smoke of stramonium in one form or another. When the book was about to be published he had some doubts of its suitability, and, before the final revise went to the printers, Mackenzie sent for me and asked me to tell him straight out what I thought of it. I said to him: "You have had the satisfaction of writing it, such as it is. It will do you no good, for you are only playing into the hands of your enemies. Put it up on the Horatian principle for ten years, and in the

meantime write a sober article in the professional journals, or, if you like, since you have been publicly attacked, in the lay press." He said, "I believe you are right." He held back the revise for a few days more, but other counsels prevailed, amongst them those of the Empress Frederick, and the book appeared.

It is very likely it would have been but a nine days' wonder for the College, as for everybody else, but for the careful propaganda against Mackenzie that had been conducted during the Prince's illness. There is some support for this view from the action, or rather inaction, of the Royal College of Surgeons. There, too, a movement had been attempted against Morell Mackenzie, but the Fellows—to their honour be it said—scouted the idea of sacrificing one of their most brilliant members to a conspiracy engineered from Berlin.⁴

Another reason for my entering into the matter of this book is that I owe it to Morell Mackenzie to say that it was I and not he who made the mistake in the statistics of the mortality of the cancer operations. It had been pointed out that he had repeated close on twenty cases, all German, and all fatal within a very short time of the operation. The statistics were decided on by Mackenzie within a week of publication. I was not aware then of the German method of multiplying their output of medical literature, whereby a surgeon and his assistant write separate articles on the same case in different periodicals. As ill-luck had it I did not happen to come across a single pair of these identical cases at the same time, and I was not studying them, only looking for surgeon's name, age of patient, and result of operation. I offered to write an explanation in the professional press, but Mackenzie forbade me, saying that his enemies would only say that he had deliberately availed himself of my then inexperience to falsify the statistics.

It is not true that the College of Physicians took any formal action against him. There is, however, no doubt that he was warned by his friends that a hostile vote would be brought forward at an early date. I happened to be with him when a note arrived from a personal friend, the then Registrar of the College, asking whether he had been correctly informed that Morell Mackenzie had resigned his membership. I quote from memory. Mackenzie immediately sat down and wrote his resignation. The artist MacNeil Whistler had shortly before sent him a copy of his "The Gentle Art of Making Enemies." It is one of the saddest recollections I have of Sir Morell Mackenzie that he gave me this book a moment or two after writing his resignation, saying, "Take it, I do not seem to have any need to study it"!

He lived only about three years longer, and I much regret that an unfortunate misunderstanding that was cleared up only too late should have separated us shortly before his fatal illness. He died on February 3, 1892.

I have long wished for this opportunity of making this apologia for Morell Mackenzie, and especially for a suitable occasion when the mistake about the statistics of the cancer operations could be made without appearing to unnecessarily rake up old stories. Like so many others I feel it right to do some justice to his memory, to all he accomplished in the creation of our branch of science in spite of the drawbacks he suffered from in health. It is, after all, only a poor as well as a belated tribute to the Father of British Laryngology, to the

⁴ The writer of the notice of Morell Mackenzie in the "Encyclopædia Britannica" gives a very erroneous view of the Emperor's case, and is especially wrong in attributing the hostile movement to the Royal College of Surgeons.

brilliant scholar, to the man of admirable private life who lived only for his family, to the man of large unproclaimed charity and helpfulness to the beginners and less pecuniarily fortunate, not only of our own profession, but those of many another.

HYSTERICAL APHONIA IN SOLDIERS.

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NOMENCLATURE.

IN a recent discussion on laryngeal neuroses at the Laryngological Section of the Royal Society of Medicine, Mr. Mark Hovell referred to the term "functional aphonia" as being obviously incorrect, because "the function of the voice is to produce sound, so that want of sound cannot be functional." But the term "functional" is simply used to mean non-organic, and, though not sufficiently explicit, it is not incorrect. He suggested the term "neurasthenic aphonia" as an alternative, but these cases are not neurasthenic, although in rare cases they may be associated with neurasthenia, nerve exhaustion having been a predisposing factor in their development. The only strictly accurate term is "hysterical aphonia," as the condition fulfils in every way our definition of an hysterical symptom—one which is "caused by suggestion and curable by psychotherapy" (1).

ÆTIOLOGY AND PATHOGENESIS.

Aphonia is one of the commonest hysterical symptoms seen in soldiers. It may result from any condition which irritates or strains the larynx. Exposure to irritant gases is probably the most frequent cause, but it often follows other inflammatory conditions, such as scarlet fever, diphtheria and catarrhal laryngitis, occurring either alone or with pharyngitis or bronchitis. The following cases are examples of hysterical aphonia from these causes:

Hysterical Aphonia after Gassing; Thirteen Months' Duration; Cured in Five Minutes.—Gunner S—, aged twenty-three, was severely gassed on October 6, 1917. On regaining consciousness, six hours later, he was quite unable to speak owing to severe pain in the throat. A week later he was able to whisper. Despite inhalations and much local treatment to the larynx, he was still aphonic when admitted to Seale Hayne Hospital on November 19, 1918. Complete recovery occurred in five minutes as the result of psychotherapy.

Hysterical Aphonia after Bronchitis; Twenty-two Months' Duration; Cured in Two Minutes.—Private S—, aged thirty-five, had bronchitis in January, 1917, followed by mutism for four months. Since May, 1917, he had been aphonic. He was treated with frequent inhalations and massage daily to the throat for two months. He was admitted to Seale Hayne Hospital on October 24, 1918, and completely cured by psychotherapy in two minutes.

Aphonia is an occasional sequel of exhausting illnesses, such as typhoid fever, malaria or chronic empyema, where the voice becomes very feeble as the result of extreme weakness, and the patient after his recovery from illness has forgotten how to use it correctly. The following case, under the care of Capt. C. H. Ripman, is of this nature:

Hysterical Aphonia following Exhaustion; Twelve Months' Duration; Cured in Ten Minutes.—Private R—, aged twenty-one, was wounded in the chest at Kut in September, 1917. The wound was complicated by empyema and four ribs were resected. He became extremely weak and could not talk above a whisper. On his way to England the ship was torpedoed and he became mute for a short time. When admitted to Seale Hayne Hospital in September, 1918, he was still aphonic, but was immediately cured by psychotherapy. He steadily put on flesh, and this he attributed to the relief in getting back his voice.

Aphonia may follow severe emotional strain, but in such cases it is generally a sequel to mutism. During recovery from hysterical mutism, whether spontaneous or as a result of treatment, aphonia often occurs as an intermediate stage, but if properly treated it should not persist for more than a few minutes. In the following case the aphonia was primary:

Hysterical Aphonia following a Shock; Two Months' Duration; Cured in One Minute.—Private B—, aged thirty-three, became aphonic in June, 1918, on hearing that his mother was dangerously ill. Despite medicine and local treatment his voice failed to return. He was admitted to Seale Hayne Hospital on August 29, 1918, and was completely cured by psychotherapy in one minute.

In the following case, under Capt. R. G. Gordon, the aphonia was recurrent:

Recurrent Hysterical Aphonia of Emotional Origin; Thirteen Weeks' Duration; Cured in Ten Minutes.—Private C—, aged thirty-six, had had three attacks of aphonia during his military service from emotional causes. In June, 1918, he was operated upon for inguinal hernia. After an operation for secondary septic trouble three weeks later aphonia developed, possibly as a result of laryngeal irritation produced by ether. After it had lasted thirteen weeks it was permanently cured by psychotherapy in ten minutes.

Actual wounds in the region of the larynx without any real damage to the vocal cords are frequently followed by hysterical aphonia, as in the following two cases under Capt. J. F. Venables and Lieut. S. H. Wilkinson respectively:

Hysterical Aphonia following Laryngeal Concussion; Six Months' Duration; Cured in Five Minutes.—Private P—, aged twenty-one, was wounded in April, 1918, by a bullet, which passed through the neck to the left of the thyroid cartilage and came out over the right shoulder. He immediately whispered, and was afraid to speak because of the pain. After treatment in four general hospitals he was cured by psychotherapy directly after admission to Seale Hayne Hospital in October.

Hysterical Aphonia and Dysphagia following a Wound of the Neck; Four Months' Duration; Cured in One Hour.—Private H—, aged twenty-eight, was wounded by a bullet passing through the thyroid cartilage on May 30, 1918. On regaining consciousness he was unable to speak or swallow. He was admitted to Seale Hayne Hospital on September 27, 1918, with hysterical aphonia and dysphagia after failure of treatment in general hospitals. The aphonia and dysphagia were completely cured in one hour by psychotherapy.

In all these cases the patient is aphonic because he is convinced in his mind that he cannot speak. He either makes no real attempt to speak at all, or his effort is inco-ordinated.

As the majority of the cases occurring to soldiers result from exposure to irritant gases, it will be sufficient to describe the mechanism in these cases. Exposure to irritant gases causes an intense inflammation of the pharynx, larynx and trachea, and in some cases of the larger bronchi. The laryngoscope reveals the presence of all the signs usually found in acute laryngitis—swelling and congestion with muco-purulent secretion. The throat symptoms are first manifested by a sensation of tension and dryness in the pharynx, a short but frequent hacking cough,

and huskiness of voice. The alterations in voice steadily become more marked, until within a few hours the voice can only be produced with difficulty and subsequently only in a whisper.

The aphonia at this stage is partly due to a protective reflex, and partly voluntary in order to avoid the pain produced in speaking. If the irritation is severe enough the patient may decide not to attempt to use his voice at all. This is the best possible thing to do, as it gives the inflamed cords a complete rest. Under treatment by vocal rest, and in some cases by inhalations, the inflammation should soon diminish, and there should be no loss of voice or other throat symptoms after a period of four weeks at most. Frequently, however, aphonia or even mutism may persist after gassing for much longer periods, even for several months. From our experience we have come to the conclusion that all cases of aphonia following gas-poisoning and persisting for longer than three or four weeks are hysterical in nature, and can therefore be speedily cured by psychotherapy whatever the laryngoscopic appearances may be. In a series of thirty-three cases of gassing without hysterical manifestations collected by Dr. Sylvia Payne, twenty-five showed throat symptoms on the first day, five on the second day, one on the third day, one on the fifth day, and one had no throat symptoms at all. In nine of these cases the throat symptoms lasted a week, and in five two weeks; sixteen cleared up within three weeks, and in two cases the throat symptoms persisted after three weeks.

As a result of the stress and strain of war, the soldier is especially liable to develop by auto-suggestion the idea that some real and permanent damage has been caused to his voice. This idea becomes all the more readily fixed if for any reason he believes that his throat is "delicate" by reason of previous attacks of catarrhal laryngitis, diphtheria or tonsillitis, especially if these have caused aphonia before.

If no improvement occurs in the first few days, the patient may become increasingly despondent and still more convinced that some permanent damage has been done. If much attention is paid to the condition of his throat at the base hospital and frequent examinations with the laryngoscope are made, the patient's idea of incurability becomes still more fixed, and an entry on his medical card of laryngitis, and especially that the vocal cords are congested or otherwise abnormal, completes the story of hetero-suggestion.

Eventually he reaches England, where he may receive further treatment likely to confirm the hysterical aphonia, such as intra-laryngeal sprays and insufflation, but if the condition is not recognised as hysterical, all forms of treatment prove unavailing unless unintentionally they act as a form of counter-suggestion. If, on the other hand, the condition is recognised as hysterical, a rapid and complete cure can be obtained by psychotherapy. The ill-effects of a wrong diagnosis are shown in the following two cases under Capt. G. McGregor :

Hysterical Aphonia Diagnosed as Tuberculous Laryngitis.—Private F— was undergoing open-air treatment in the tuberculosis huts. There were two reports from the laryngologist stating that it was an undoubted case of tuberculous laryngitis, and his invaliding documents had been completed. He had been whispering for five months, but there was no evidence of tuberculous disease of the lungs. With twenty minutes' persuasion he talked in a normal voice, and was discharged from hospital a few days later.

Atrophic Laryngitis associated with Hysterical Aphonia.—Gunner W— states he was gassed in May, 1916, and lost his voice immediately. His vocal cords were said at that time to look very red. The laryngologist's report, dated November 2, 1918, stated: "Mucous membrane of larynx much atrophied. Vocal cords

almost non-existent. 'This condition will be permanent.' The patient looked thin and depressed, spoke in an almost inaudible whisper, and said he had given up all hope of ever getting his voice back. He had been treated with electricity, inhalations, and painting the larynx. After twenty minutes' persuasion he was speaking in a normal voice.

The aphonia may be due to flaccid or spastic hysterical paralysis of the laryngeal muscles, corresponding with the flaccid and spastic forms of hysterical paralysis of a limb. In the flaccid variety the muscles, though still capable of contracting, as shown by the fact that they do so if painted by an irritant, remain in the cadaveric position when the patient tries to speak, no trace of adduction occurring. In slighter cases the attempt to phonate results in sufficient adduction to cause the glottis to assume an elliptical form, or the anterior two-thirds of the cord may come together, leaving a triangular gap in the posterior third, but the opposition to the expiratory blast is insufficient to produce a voiced sound. In rare cases one cord may be adducted normally while the other remains abducted (C. E. Jones-Phillipson).

In the spastic variety overaction and irregular action of the laryngeal muscles takes place, and the inco-ordinated effort may involve all the muscles of the neck and chest. Such extreme spasm of the adductor and constrictor muscles may occur on attempting to phonate that both the true and false cords are tightly pressed together, or only the anterior two-thirds of the false cords may meet, and in the gap between their posterior thirds a small portion of the true cords, slightly separated, is seen. In these cases the spasmodic action of the larynx is accompanied by irregular spasmodic action of the expiratory muscles, the whole chest becoming fixed, and the patient's face congested and the veins of his neck swollen.

Capt. W. R. Reynell found by means of the spirometer that the respiratory excursion was subnormal in all cases of aphonia, but returned to normal directly complete recovery took place.

DIAGNOSIS.

In the discussion at the Laryngological Section already referred to the President condemned "any arrangement whereby patients suffering from neuroses of the larynx are placed under a medical man who carried out treatment without making a laryngological examination." Believing that many aphonic soldiers are "not suffering from neuroses but from the result of laryngitis caused by cold or gas, or from weakness, exhaustion, early tuberculosis or paralysis, or they may be simulating," he apparently regards a laryngoscopic examination as the only means of making an accurate diagnosis. But with a single exception every one of a series of 100 consecutive cases of soldiers suffering from aphonia has proved to be hysterical whatever the primary cause, as an immediate and permanent cure resulted from psychotherapy. Of these, 58 followed gassing, 20 were due to emotion, 15 were associated with laryngitis and tonsillitis or bronchitis, 3 followed wounds of the neck, and 1 each a wound of the chest and debility. In one case under Capt. G. McGregor, the symptom was clearly the result of imitation. The patient was a neurotic youth who was sent to a military convalescent hospital with laryngitis. For three weeks he was in the same room as two men suffering from aphonia, and during this period he lost his voice. In another case under Major J. F. Venables, a man developed aphonia whilst washing dirty bandages. The nurse who was working

with him became similarly affected immediately afterwards, doubtless as a result of subconscious imitation. We have seen no malingerers. Tuberculosis and organic paralysis as causes of aphonia are apparently very rare in soldiers, and can generally be suspected from the presence of organic disease elsewhere. Moreover the voice is generally of a different character to that of hysterical aphonia, as in the following case—the hundredth of our series, and the only one in which the condition was organic and not hysterical.

Aphonia due to Paralysis of the Left Vocal Cord Caused by an Aneurysm.—A pensioner was sent to us for the day from a town a hundred miles away in order to be treated for aphonia, which had been present for over a year. It had been regarded as hysterical, but directly he was seen it was recognised that his speech was harsh and rough as well as aphonic, and it was occasionally slightly voiced. Although we had never heard such a voice in an hysterical case we started treatment in the usual way, but as no improvement had occurred in five minutes we discontinued, although in any ordinary hysterical case we should have gone on till the normal voice returned, as we felt convinced the condition was organic. Examination now showed that the left vocal cord was widely abducted and completely immobile, and signs of an aortic aneurysm were present.

Thus, in the only case out of the hundred which proved to be organic, this was recognised to be the case by the voice itself, the conclusion being confirmed by the laryngoscopic examination.

Laryngoscopic examination may be directly harmful. The President of the Laryngological Section described various abnormal appearances of the larynx, of which some followed exposure during the winter and others followed gassing; from these abnormal appearances he concluded that the aphonia was not a neurosis. The patients were consequently treated by intra-laryngeal methods instead of by psychotherapy, and it is not surprising to find that, in common with most of the other speakers, his results were not very satisfactory. If no laryngoscopic examination had been made and nothing abnormal discovered, the cases would have been diagnosed as hysterical, and an immediate cure would have followed psychotherapy. Realising this, Dr. Permewan remarked at the meeting that his experience in these cases had not been at all favourable, and that in his opinion the cure of these men is more in the sphere of the neurologist than the laryngologist. On one occasion one of us visited the laryngological section of another hospital, and in half an hour cured eight aphonic patients, who had been under treatment for long periods. On another occasion nine cases were transferred to Seale Hayne Hospital from the wards of a laryngologist, where for between six weeks and six months they had been repeatedly treated with intra-laryngeal electricity, etherisation and other methods without success. They were all cured on the same or following day by simple persuasion and re-education, the shortest period required being thirty seconds and the longest four hours. The failure of the laryngologists was due to the doubt inspired in their minds by their laryngoscopic examination as to whether the condition was functional or organic. The success of the neurologists was due to the fact that they had made no laryngological examination and were troubled with no such doubts.

The diagnosis of the atonic from the spastic variety is of no practical importance, as both are curable by the same means. But an external examination is sufficient to decide in most cases, as in the former the patient obviously makes no attempt to phonate, whilst in the latter he makes violent efforts, in which the muscles of the neck and chest take part, and the face often becomes flushed with the exertion.

PHARYNGEAL ANÆSTHESIA.

Pharyngeal anæsthesia appears to have been first described as a symptom of hysteria in 1872 by Anstie (2). "Anæsthesia is very often found when looked for," he wrote, "in one situation where its presence is highly characteristic—the back of the pharynx. If a patient, not taking bromide, can, without retching, let you pass the finger well down to the epiglottis, the diagnosis of hysteria is exceedingly probable." The qualification concerning bromides was thought necessary on account of the observations of Huette in 1850—that the larynx becomes anæsthetic and the pharyngeal and palatal reflexes disappear in patients taking bromide—an observation which has prompted many physicians to give the drug to patients before examining them with the laryngoscope since this procedure was first suggested in 1867 by Gasselin. Thus, in the *Practitioner* for August, 1918, Sir StClair Thomson describes how he gave bromide "for three days beforehand to diminish the reflex" before passing Brünings' bronchoscope. It can, however, be of little or no real value, as Krosz found in 1876 that it required an enormous dose, such as between 125 and 150 gr. taken at one time, to abolish the pharyngeal reflexes, 100 gr. never being sufficient. Our own observations also show that the supposed effect of bromide on the pharynx, which has been copied from book to book, is non-existent, as careful measurement of the pharyngeal excitability in ten cases of epilepsy before receiving bromide and after taking between 45 and 80 gr. a day, often for several weeks, in no single case produced any alteration.

The question is not merely of theoretical interest, as during the last few years we have seen many cases diagnosed as hysterical on account of the presence of pharyngeal anæsthesia. One neurotic young woman barely escaped with her life, because the discovery of pharyngeal anæsthesia led her physician to diagnose an attack of abdominal pain as hysterical in origin, although the delayed operation showed she was suffering from acute appendicitis. The presence of pharyngeal anæsthesia has often been mentioned in reports on war neuroses as an indication of their hysterical nature. It is clear, therefore, that the time has come to decide what value can be placed upon this supposed stigma of hysteria.

With the aid of Capt. E. A. Peters, one of us (A. F. H.), with Major J. L. M. Symns, first drew up a scale of pharyngeal sensibility, beginning with 0, which indicates complete anæsthesia, and 1, which indicates deficient sensibility and absence of all pharyngeal reflexes, and passing up to 7, which indicates such an extreme degree of hyperæsthesia and such violent reflex spasms that it is quite impossible to examine the throat. After a few days' practice we found our standards were so definite that we always indicated the sensibility in a given case, examined independently, either by the same number or occasionally by numbers differing by one, but never more. It is not easy to describe the varying reactions, but the following gives an approximate idea of the meaning of each number:

- (0) Anæsthetic and no reflex.
- (1) Hardly felt and no reflex.
- (2) Felt easily, and very slight reflex.
- (3) Slight levator reflex.
- (4) Good levator and slight tensor reflex.
- (5) Stronger levator and tensor reflex.
- (6) Very brisk reflex, making examination very difficult.
- (7) Maximal reflex, making examination quite impossible.

We then systematically recorded the sensibility in a large number of men, some healthy, others suffering from a great variety of surgical and medical conditions, and others suffering from definite hysterical symptoms, the nature of which was always finally confirmed by their cure by means of psychotherapy. We made our examination without indicating to the patient what object we had in view. He was told to open his mouth, and the back of the pharynx and soft palate were then touched with some blunt object, the tongue being depressed when necessary. In the rare cases in which no reflex was produced the man was asked what he had felt during the examination.

The following tables show the pharyngeal sensibility found by one of us (A. F. H.), with Major Symms, in 170 individuals with no hysterical symptoms and 64 with hysterical symptoms. A third table shows separately the cases of hysterical aphonia and mutism, which are also included in the second. We have analysed these, because it is often asserted that pharyngeal anæsthesia is particularly well marked in hysterical aphonia, just as hysterical anæsthesia is said—quite erroneously—to occur in the external ear in hysterical deafness, in the eye in hysterical blindness, and so on—assertions which we have found in a considerable experience to have not the slightest foundation in fact. The following quotations from Dr. J. A. Ormerod's article on "Hysteria" in Allbutt and Rolleston's "System of Medicine" are typical of what has been written on the subject both by physicians and laryngologists: "It is common knowledge that the fauces in hysterical patients often show great lack of irritability," and "such cases (hysterical aphonia) are often extremely easy to examine with the laryngoscope owing to a lack of irritability in the fauces, which is common in hysteria."

Type of case.	Degree of excitability.								Total
	0	1	2	3	4	5	6	7	
Non-hysterical cases	1	14	24	42	53	22	12	2	170
Percentage	0.7	8	14	25	31	13	7	1.3	100
Hysterical cases	0	4	13	13	19	8	5	2	64
Percentage	0	6.5	20	20	30	12.5	8	3	100
Hysterical aphonia	0	3	5	5	5	5	0	1	24
Hysterical mutism	0	0	3	2	4	1	0	0	10
Percentage of aphonics and mutes	0	9	24	21	25	18	0	3	100

In several cases of hysterical aphonia as well as of other hysterical symptoms it was found that the pharyngeal excitability remained unaltered after a cure had been obtained. The single case in which complete pharyngeal anæsthesia was present was that of a stolid individual, convalescent from neurasthenia due to simple exhaustion. He had no hysterical symptoms and there was no history of hysterical manifestations in the past.

These figures show conclusively that pharyngeal sensibility is no more deficient in individuals suffering from hysterical aphonia or other hysterical symptoms, such as paralysis, contractures, fits, blindness or deafness, than in individuals who neither are suffering nor have ever

suffered in this way, and varies in a similar manner in different people. When care is taken to avoid suggestion complete pharyngeal anæsthesia is hardly ever found, and the comparatively rare absence of reflexes is met with in normal people just as often as in patients with hysterical symptoms.

An interesting point is that in our more recent series of 100 cases of aphonia, in the only one which proved to be organic in nature laryngoscopic examination was unusually easy owing to the extremely slight degree (1) of pharyngeal sensibility. If pharyngeal anæsthesia had been regarded as a sign of any value it would thus often have led to erroneous diagnoses.

These investigations were all made on soldiers, but one of us (A. F. H.) carried out a similar investigation on a large number of patients at Guy's Hospital a few years ago and obtained precisely similar results, although about half of the patients were women and nearly all the hysterical cases were young females. Unfortunately the exact figures have been lost, but they did not differ in any way from the present series.

We may thus conclude that pharyngeal anæsthesia is not a stigma of hysteria, and that when it is habitually found by a given observer it must be produced in the majority of cases by involuntary suggestion on his part. As most patients suffering from hysterical symptoms are abnormally suggestible, it is more likely to be found by careless examination in such individuals than in others. As many individuals suffering from organic disease are equally suggestible, pharyngeal anæsthesia may easily be produced in them. Conversely, in the not uncommon cases seen under the peculiar conditions of modern warfare, in which hysterical symptoms develop as a result of an overwhelmingly powerful suggestion in men who are not abnormally suggestible, pharyngeal anæsthesia would not be produced by careless examination, and the hysterical nature of the symptoms might be doubted if any importance were erroneously attributed to pharyngeal anæsthesia as a stigma of hysteria.

In order to explain the frequently repeated assertion that laryngoscopic examinations are particularly easy to make in patients with hysterical aphonia, it must be remembered that about 25 per cent. of patients suffering from aphonia or other hysterical symptoms have, like a similar proportion of normal individuals, a comparatively insensitive pharynx (1 or 2 in our scale). The presence of the insensibility would not be remarked upon in a normal individual, but its presence with hysterical symptoms would at once strike an observer brought up with the idea that pharyngeal anæsthesia is a stigma of hysteria, and the one case confirming this would make more impression on his mind than the three in which the pharynx was more sensitive. Moreover, our observations show how easily pharyngeal anæsthesia is produced by suggestion, and a few words of encouragement by the observer would be enough in many cases to render a previously sensitive pharynx insensitive, although the observer might have no notion that his words would have such a striking effect. In most individuals the pharyngeal sensibility remains unaltered on repeated examination, but in abnormally suggestible men, whether they are actually suffering from hysterical symptoms or not, we have frequently been able to reduce the sensibility from 3, 4 or 5 to 1 or 2 by direct suggestion.

In his book on "Hysterical Disorders in Warfare," Dr. L. R. Yealland states that "it has been my experience to find in conditions of hysterical mutism quite a marked sensory loss over the posterior

wall of the pharynx," only strong faradic shocks being recognised; "weaker currents were appreciated in cases of aphonia and there was no perceptible change in the stammerers." In striking contrast to this, Liébault (3), who commanded the Oto-Rhino-Laryngological Centre of the XIth Region of the French Army, found diminished or complete loss of pharyngeal sensibility in 52 cases of aphonia, but such a degree of hyperæsthesia in 15 mutes and 8 stammerers that he was unable to examine the larynx of any of them. These contradictory results can only be explained by the effect of unconscious suggestion on the part of the observer, who examines his patients with the idea already fixed in his mind that he will find increased or diminished sensibility as the case may be, for our observations described above prove that the pharyngeal sensibility shows exactly the same variations in mutism, aphonia and stammering as in normal individuals.

PROPHYLAXIS.

It is apparent from the large number of cases of long-standing aphonia in the country that the hysterical nature of the complaint is little recognised. An hysterical symptom being one that is created by suggestion and is curable by psychotherapy, no case should persist for more than a few hours after admission to a hospital in England. But aphonia is not only one of the easiest hysterical symptoms to cure; it is also one which should never be allowed to occur at all. If it be recognised that aphonia following gassing and lasting for longer than four weeks is always hysterical, a medical officer could induce the patient to speak in a few seconds by simple persuasion if he were still whispering at this period. The same holds good in cases of aphonia due to other causes. Should the aphonia not clear up when the acute stage of laryngeal irritation has passed away, the condition should be regarded as hysterical and should at once be removed by persuasion. Of 67 consecutive cases the average period under treatment before admission to Seale Hayne Hospital was 205 days, the maximum time being 19 months, the minimum 2 weeks. Since these statistics were made a pensioner who had been aphonic for 35 months after an attack of tonsillitis was cured at a single sitting. The long duration of symptoms had led to suspicion of tuberculous laryngitis being raised, and he was sent to us by the tuberculosis officer, who disagreed with this diagnosis. It is a remarkable fact that in spite of disuse for 35 months the voice was as strong and clear as ever directly it returned, showing that no serious degree of atrophy of the muscles involved nor changes in the laryngeal articulations could have occurred.

Too frequent examinations by the laryngoscope and intra-laryngeal treatment should be avoided, as these are the means by which the idea of aphonia becomes perpetuated in the patient's mind. Entries on the patient's papers of "chronic laryngitis," with descriptions of "slight congestion of the vocal cords," etc., do much harm. No doubt a slight degree of laryngitis may still exist four weeks after gassing, but this is never sufficient to cause aphonia. Examination of the larynx at this stage indeed often shows slightly congested vocal cords, but as Mr. W. M. Mollison points out, the congestion may be due to the fact that the larynx has been wrongly used and the vocal cords have been strained. It does not indicate that any active disease is present, nor does it in any way hinder a cure by psychotherapy.

With a history of gassing no laryngoscope examination is ever necessary, and even if for any reason the possibility of organic disease, such as tuberculosis, arises, a single examination should suffice.

TREATMENT.

At the discussion before the Laryngological Society Dr. Permewan and Dr. C. E. Jones-Phillipson expressed themselves as opposed to the collection of many cases in one hospital, as, in their experience, they reacted badly on each other by talking together in whispers. But in a well-conducted hospital they can only react favourably on each other, as no patient is allowed to remain uncured for more than twenty-four hours after admission, so that there are always some who have recently been cured of long-standing aphonia, who encourage the new-comers to believe that they, too, will be cured at once. For this reason we have found that we can be more certain of procuring a rapid result at Seale Hayne Hospital with its atmosphere of cure than when we undertake the treatment of patients elsewhere, although we have often succeeded in quickly curing aphonia in other hospitals when the transfer of a patient was inconvenient. Of 67 consecutive cases, 37 (or 55 per cent.) were cured within five minutes, 21 (or 31 per cent.) within half an hour, and 9 (or 13 per cent.) required more than half an hour.

The treatment of hysterical aphonia is so easy that its technique should be learnt by every medical officer. No special qualifications are necessary, and no instruments are used. As the result of experience our methods have become increasingly simple. Twelve months ago we often used electricity as a means of suggestion, applying a faradic current either over the thyroid cartilage or with the aid of an intralaryngeal electrode to the vocal cords, though we sometimes found that the introduction of the intralaryngeal catheter alone without electricity would effect the cure. When these methods failed, as occasionally happened, ether administered rapidly to the stage of intoxication, with vigorous suggestion continued as the patient was coming round until he was wide awake, was generally successful. To-day it is only in very exceptional cases that such means are required.

On admission the medical officer interviews the patient and obtains his history. He then definitely promises a cure as soon as he can find time to give the necessary treatment. In the short interval of waiting the patient comes across several other men who had been admitted shortly before, and who were rapidly cured, so that, as a rule, by the time the medical officer is ready the patient is ready to be cured.

It is advisable, though not essential, to treat the patient by himself in a private room. He sits comfortably in a chair while it is explained to him that his loss of voice is due to the fact that he has forgotten how to use it. He is told that he whispered after being gassed in order to save himself from pain, as his vocal cords were inflamed; as the inflammation and the pain have now long ago passed away there is no further need to save his voice. He is then asked to cough, as it is comparatively rare that there is any alteration in the cough. His attention is immediately drawn to the natural cough, and it is explained to him how the noise made in coughing is actually the same as in speaking, so that if a man can cough he can also say "one." He is told to cough again, and say "one" immediately after without any pause. He often succeeds at the first attempt, and with very little additional encouragement he is soon able to talk in his natural voice. It occasionally happens

that the voice is at first falsetto, especially if the patient has had a falsetto singing voice, or it may be hoarse. In one case it was husky in ordinary conversation, but clear on shouting. As this is due entirely to inco-ordination of the cords, treatment by re-education should be continued until the natural voice returns, which usually happens in a few minutes. There is occasionally a tendency to stammer at first. This can always be overcome in a few minutes by re-education and persuasion, which should be employed immediately.

In the rare cases in which a patient cannot cough he can be easily made to do so by tickling his throat by an intra-laryngeal probe or by simply making him gargle.

The treatment thus consists simply of explanation and persuasion, but it is often advisable to perform simultaneously gentle manipulations with the fingers over the glottis, encouraging and persuading the patient all the time. The cure is almost invariably complete in anything from half a minute to one hour. Delay is usually the fault of the medical officer and not of the patient. It is necessary, therefore, not to lose one's temper. If fatigued or unfit the medical officer will find it better not to commence treatment until a more suitable occasion arises, as temporary failure tends to make him less confident in the treatment, and, *vice versa*, success in treatment increases his confidence and ensures rapid results.

Recently three of us failed in an attempt to cure four cases of aphonia in another hospital after a long, cold, and tiring night-journey. On admission to Seale Hayne Military Hospital some days later all four cases were cured within an hour at the first attempt.

We have never found it necessary to limit a patient's smoking, as advised by Mr. W. Stuart Low, and we never give any drugs, such as *nux vomica*, which he also regards as beneficial. Nor do we resort to disciplinary measures as a preliminary to treatment in the manner advised by the President of the Laryngological Section, who confines patients to a bed in a room by themselves, allows no visitors, tobacco, or literature, and thinks "there is no harm in occasionally forgetting a meal."

Dr. H. Smurthwaite obtained excellent results with psychotherapy, and only had 11 failures out of 239 aphonic cases. He stated that he had often given as much as three-quarters of an hour to a single case. From our experience we are convinced that he would have cured the remaining 11 cases if he had been able to persevere with the treatment still longer, even for the two, three or more hours which we have very exceptionally found to be necessary, as in the following case, under the care of Capt. G. McGregor.

Hysterical Aphonia of Ten Months' Standing Cured by Persuasion after Six Hours.—This case was seen at another military hospital in September, 1918. Gunner A— had been gassed in France in November, 1917, and had spoken in a whisper ever since. He had been in various hospitals and a command dépôt, and had been returned to his unit for duty, although he was still un cured. He had also been examined by several throat specialists, the last of whom, a fortnight before he was seen by Capt. McGregor, had told him that "he could speak if he liked," and that "there was nothing the matter with his throat." The patient was resistant to treatment, but after six hours' continuous persuasion he was speaking in a normal voice.

No after-treatment is required. Cases of short duration can return to duty at once. In old-standing cases it is better to keep them under observation for about three weeks, in the meantime giving the patient

some suitable occupation. In only one case did a relapse occur; this was after a nightmare, the aphonia being now complicated by stammering, but rapid recovery followed a renewal of treatment.

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- (1) A. F. HURST.—*Seale Hayne Neurological Studies*, vol. i, 1918, p. 106.
- (2) F. E. ANSTIE.—*Lancet*, vol. ii, 1872, p. 842.
- (3) G. LIÉBAULT.—“Grandes Questions médicales d'Actualité: *Rev. Gén. de Path. de Guerre*,” p. 245. Paris, 1917.

SOCIETIES' PROCEEDINGS.

ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

November 2, 1917.

President: DR. A. BROWN KELLY.

(Continued from p. 176.)

The PRESIDENT: Dr. Irwin Moore has taken much trouble with this case, and has been well warranted in doing so, because we are not clear as to the significance of the appearances. On the one hand, he adduces evidences of the presence of tuberculosis, and, on the other, the Wassermann test came out strongly positive. Are we to regard the appearances in the pharynx and larynx as tubercular or as syphilitic? I am unacquainted with tubercular manifestations such as here seen, but I have had two or three cases similar in aspect in which congenital syphilis was undoubtedly present. I would therefore regard the case as one of congenital syphilis of the throat in a tubercular subject. I think Mr. Hunter Tod and Dr. Lambert Lack have also shown cases with similar appearances in syphilitic patients.

Sir STCLAIR THOMSON: I suggest that Dr. Irwin Moore treats this patient more thoroughly for syphilis and reports to the Section.

(Prof. SHATTOCK demonstrated the slides of the case.)

Prof. SHATTOCK: We must allow that pathologically this is an obscure case. It is obviously a mixed one of tuberculosis and syphilis; but the problem to settle is whether the local condition is due to a tubercular or to a syphilitic infection. I am inclined to view the chronic oedema of the uvula and palate as having a tubercular genesis for the following reasons: (1) It was originally continuous with the site of the adenoid disease of the nasopharynx, which is, histologically, undoubtedly tubercular: a post-operative infection can be excluded, therefore, as a cause of it. (2) The secondary disease of the cervical gland is tubercular. (3) The condition improved after subcutaneous injections of tuberculin. The chief histological feature in the uvula is the remarkable proliferation of the endothelium of the lymphatic capillaries, some of which are quite blocked; amongst the large endothelial cells there are no red blood-corpuscles nor polymorphs, but a moderate number of multinucleated cells, some containing two or three nuclei; and one as many as nine, peripherally arranged. The microscopic findings suggest that the disease of the uvula is due to the transference of tubercle bacilli by the lymph-channels, and their subsequent location

in the lymphatic endothelium, with a resulting endothelial proliferation and a scanty giant-cell formation—a tubercular capillary lymphangitis. The improvement under tuberculin injections points to a tubercular genesis of the lesion, in spite of the fact that no tubercle bacilli (nor other organisms) were found in sections of the piece of the uvula removed at the first operation: and that no tuberculosis was set up in the guinea-pig inoculated with the second, basal, portion of the uvula excised. Short of an actual transference of bacilli, the changes might be attributed to the access of toxin produced in the nasopharyngeal tubercular lesion. This would put them aetiologically on a line with lupus erythematosus, whether of skin or buccal mucosa, many cases of which presumably result from the action of tubercle toxin apart from a growth *in loco* of the tubercle bacillus, since a large proportion of the subjects of lupus erythematosus are tubercular, although the lesion as a rule contains no tubercle bacilli: yet not only may giant-cells occur in lupus erythematosus, but tubercle bacilli have been found in some cases. Clinically the amelioration of lupus erythematosus is not to be observed under the use of tuberculin. This suggests that the condition in Dr. Irwin Moore's case is more than toxic, and that there may be bacilli, few and far between, in the tissues. The alternative view would be to regard the œdema as due to syphilitic infection, and to look upon the presence of the adenoids and their tubercular infection as things independent of the other condition. There is one point in conclusion which I venture to suggest in connection with the cases of chronic œdema occurring in the adult, and that is whether some may not have a gouty pathogenesis. I do not mean that the tissue would show microscopically the cell proliferation, necrosis, and deposition of urate occurring in a proper gouty lesion, but whether the condition may be a manifestation of what is clinically sometimes called "goutiness."

Dr. IRWIN MOORE (in reply): The patient has not had any treatment for syphilis. Since he was exhibited here he has lived in Devonshire, and had no treatment of any kind. My conclusion is that tuberculosis is the main factor in the case, superadded to congenital syphilis. It is my intention to give the patient antisyphilitic treatment, as suggested by Sir St. Clair Thomson.

Tertiary Syphilis of the Pharynx in a Female, aged forty-four, clinically resembling Tuberculosis of a Lupoid Type.—Irwin Moore—This case was shown at the previous meeting of the Section on July 1, 1917,¹ and described in the agenda as "lupoid" tuberculosis, on account of the clinical appearance. A positive Wassermann reaction was obtained the morning of the meeting. Since showing the case the following investigations have been carried out:

On June 5 the uvula, also pieces from the pharynx, were removed, and several sections examined by Dr. Fletcher. He reports that "they show thick infiltration of the tissues by small round inflammatory cells. This is especially marked near the surface, while the deeper areas are densely fibrotic. The surface epithelium is puckered but there is no ulceration. No giant-cells nor epithelioid cells were found, nor was there evidence of vascular thickening. The features are those of a chronic inflammatory condition. The Wassermann reaction being positive, the condition is presumably syphilitic" (Dr. Eastes' Laboratory). On June 12 an intravenous injection of galyl (0.25 grm.) was given with

¹ *Proc. Roy. Soc. Med.*, 1917, xi (Sect. Laryng.), p. 4.

remarkable results, as may be seen by comparing the drawing of the pharynx made on May 22 (Fig. 1) (which represents also the condit on when shown at the Section meeting on June 1) with that on July 10 (Fig. 2).

It will be observed that in the space of one month almost the entire lupoid-looking infiltration had disappeared, and its place been taken by cicatricial tissue. The nodular-looking uvula seen in the first drawing (Fig. 1) is not seen in the second drawing (Fig. 2), since it was removed for microscopic sections. The tongue, which was to a great extent fixed (Fig. 1), could be protruded further (Fig. 2), and the larynx, which was not previously seen, could be easily examined with the laryngeal mirror.

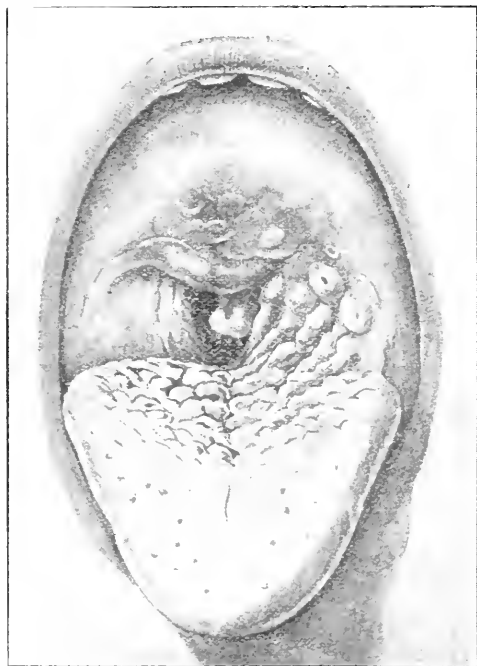


FIG. 1.—Tertiary syphilis of the pharynx in a female, aged forty-four, clinically resembling tuberculosis of a lupoid type. Shows extensive nodular infiltration of the tonsils and fauces, which has extended on to the soft palate, uvula, and base of tongue. The posterior faucial pillars are scarred, and have become approximated, and united to the posterior pharyngeal wall. The oropharynx is markedly stenosed. Case shown June 1, 1917. Drawing made May 22, 1917.

Patient's condition has so much improved since the injection, and the airway has become so free, that respiration can now be carried on with the tracheotomy tube corked. It is, however, being retained a little longer for safety.

Complete Paresis of the Left Vocal Cord due to a Mediastinal Growth.—**Irwin Moore.**—Patient, a male, aged forty-five, attended the Great Portland Street branch of Golden Square Hospital on September

18, complaining that three weeks previously a piece of meat had stuck in his throat and was only released by being pushed down by a bougie. Since this he has had a sore throat, hoarseness of the voice, and has only been able to swallow semi-solid food. His former weight was 11 st., but since this occurrence he has lost 2 st. When first seen by the exhibitor on October 5, considerable oedema of the arytenoids and upper part of the larynx was observed and the vocal cords could not be seen.

There has been progressive emaciation during the past two months. Patient has a cough, with slight sputum and dyspnoea. His previous health has been good, and there is no history of syphilis.

On October 12, the oedema having cleared up, the left vocal cord was seen lying in the "cadaveric" position.

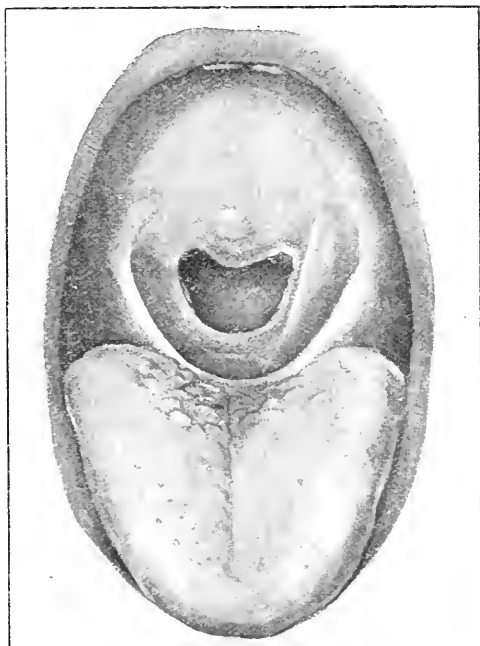


FIG. 2.—Shows the result, one month later, of an intravenous injection of galyol (0.25 cgrm.). Case shown November 1, 1917. Drawing made July 10, 1917.

On October 18 Dr. Halls Dally kindly saw patient for me, and reports as follows:

Examination of the chest revealed impaired percussion note over the upper two-thirds of the left lung, front and back, the note being dull from the lower border of the clavicle to the third rib. Over this area the breath-sounds are feeble, and crepitations were audible above and below the left clavicle, and in the left interseapular space at the level of the sixth and seventh thoracic vertebrae.

Blood-count.—Red cells, 5,000,000 per cubic millimetre; white cells, 12,000 per cubic millimetre; colour index, 0.7 per cent.; haemoglobin, 70 per cent.

The radiogram of the chest shows a shadow with ill-defined outline extending from the mediastinum over the left upper lobe and upper portion of lower lobe. The appearances of this shadow suggest a mediastinal new-growth invading the left lung (H. D.).

Dr. SYME: I should like to mention two cases of recurrent paralysis. A man was operated upon under ether for hernia, and a week later he lost his voice. I saw him three weeks after his operation. He had complete paralysis of his left cord. The œsophagoscope and screen showed no cause. In October his voice had returned. He has now abductor paralysis. I thought there might have been dragging on the chin at the time of the operation and hæmorrhage into the sheath of the nerve, but there was no trouble with the anæsthetic. The other case was that of a girl with a scar on the left side of the neck, the result of a removal of glands three years previously. Two months ago she lost her voice, and had complete paralysis of the left cord. This is passing off, and there is now paresis of the abductor.

Dr. W. HILL: I think it is mediastinal growth, but it is curious there should be recurrent paralysis, unless the aorta has been pulled down, which does not appear to be the case. It might be due to a gland higher up.

Illustrations of Nasal Endo-rhinoscopy (Epidiascope).—P. Watson-Williams.—This series of twenty-nine drawings, illustrating endo-rhinoscopy, emphasises the value of the exact inspection of the nasopharynx and the posterior portion of the nasal passages, more particularly for the detection of pathological conditions which, by all other means, are invisible.

Some of the cases illustrated show small streams of muco-purulent discharge from one or both sphenoidal sinus ostia, or from the middle meatus posteriorly, and in some of the examples probes are shown entering the sphenoidal and frontal sinuses. Examples of minute polypi in the speno-ethmoidal region of early malignant growths in the nasopharynx are included. Other illustrations show changes in the opening of the Eustachian tube in swallowing as compared with the appearance during quiet respiration. The great majority of the illustrations have been taken with the Holmes' modification of Valentin's nasopharyngoscope; there is only one example of the picture obtained by Wolff's instrument to show the disadvantage the inversion of the image yields, the more restricted area coming into view.

Dr. KELSON: When working with this instrument, I was so disappointed in my results owing to pus and mucus getting on to the reflecting surface of the instrument, so that one could not see, that I gave it up. How does Dr. Watson-Williams prevent the mirror being soiled by the discharge, as it is in cases when such is present that it should be most useful?

Lieut.-Col. PERRY GOLDSMITH: I know this instrument, as I saw it when first exhibited. It is Valentin's instrument, with the curve slightly altered, to which somebody else's name has been attached. While that is common in the United States, it is not unknown in this country. When I saw the instrument exhibited by Dr. Holmes, in Boston, I could not see very much with it—nothing as much as he saw—nor could I do so for some time until I had the instrument and used it. I find it of value in a limited number of cases. It shows you are in the Eustachian tube when passing a bougie; not infrequently we think we have passed it there, and it is not so. Secondly, there are cases with chronic catarrhal otitis which do not clear up, and the nasopharynx is invisible. With this

instrument you can examine the fossa of Rosenmüller, and occasionally the opening of the sphenoidal sinus and a polypus in the posterior ethmoidal region. I regard the instrument as of great value, and the more one uses it the better one likes it. It is not a toy, and one can see better than with a post-pharyngeal mirror.

Dr. DUNDAS GRANT: I have not used this endo-pharyngoscope as often as I might have done, because I am constantly doing posterior rhinoscopy, and getting a good view. To-day, however, I had a case of slight adhesion, owing to which I could get a good view with the posterior rhinoscope, and this instrument got me out of the difficulty, which was to prove absence of disease at the mouth of the Eustachian tube. No doubt one has to study and correct one's own eyes, but I do not find the instrument easy.

Major WATSON-WILLIAMS (in reply): After cocaineisation one is much less likely to have the mirror clouded. If that should happen, I draw the instrument out, clean it, and replace it. But once or twice I have had to mop out accumulations of pus. My experience at the beginning with the instrument was much like Dr. Dundas Grant's. I am now using it almost constantly, and in many cases would feel lost without it, so I keep three instruments at hand lest I should get stranded.

A Piece of Mutton-bone removed from the Entrance to the Œsophagus.—Sir William Milligan.—A large piece of bone removed from the entrance to the œsophagus. Patient, a soldier, swallowed the bone while taking a hurried meal in the trenches. Complained of severe pain, and experienced the greatest difficulty in even swallowing fluid. Was sent home at once. First attempt to dislodge the bone (under general anaesthesia) failed. Second attempt, forty-eight hours later, succeeded. Irwin Moore's forceps were used upon both occasions.

Fibro-papilloma of Trachea; Removal by External Operation; Recovery.—Sir William Milligan.—M. W.—, aged twenty-nine, female. Gradual and progressive dyspnoea for a few months before becoming a hospital out-patient. While attending medical out-patient clinic, June, 1917, developed pneumonia. Admitted as an in-patient, and, after recovery, was transferred to the Throat and Ear Department, August, 1917. Upon indirect examination an elongated growth was seen upon the posterior wall of the trachea and apparently occupying about five-sixths of its lumen. The slightest exertion caused great dyspnoea.

Direct examination showed that the growth was springing from the posterior wall of the trachea, and was about $\frac{3}{4}$ in. in length, firm and resistant to palpation with a probe and presenting a slightly lobulated surface.

Tracheotomy was performed under local anaesthesia, followed at once by a crico-thyrotomy. The growth was removed piecemeal by forceps and scissors, and its broad attachment to the posterior wall of the trachea rubbed freely with chromic acid (40 per cent.) The external wound was immediately closed, but the tracheotomy tube was retained for a week. Complete recovery. Patient able to resume her work as a table-maid.

(Slides demonstrated by epidiasecope.)

Dr. WILLIAM HILL: I wrote an article on this subject for an encyclopædia, and I described it as Tilley's method of combined bronchoscopy and screen examination. I employed a method which was published by one of my assistants at St. Mary's Hospital, with skiagrams. We saw the pin grasped, and it gave way. We again seized the pin, drew it down, then altered the position of the forceps, grasping the point, and

we got it up with ease. I did this, having seen Mr. Tilley do it at University College Hospital eight years ago.

Dr. DUNDAS GRANT: I have on a former occasion mentioned the case of a child on whom I did tracheotomy on account of papillomata of the larynx. I found, however, that the child did not breathe better. I removed the tube and discovered a portion of growth presenting at the tracheotomy orifice. I removed a large papilloma growing from the wall of the trachea, and the breathing was restored. I do not remember another such case, and agree that it must be a rare condition. In operating on the bronchial tubes under the fluorescent screen, the difficulty would seem to consist in looking into the screen and manipulating the forceps at the same time. All that I have done in that way with the screen has been to pass an œsophageal bougie in a case of dilatation of the œsophagus from "cardiospasm": by that means I was able to guide it through the abdominal œsophagus and the cardiac orifice, steering clear of the dilatation in which the bougie is so apt to lose itself.

Dr. KELSON: Was the diagnosis verified by microscopical examination, as so many of these growths are found to consist of thyroid tissue?

Sir WILLIAM MILLIGAN (in reply): I have used this method for years, but as this was a particularly good case I thought it might be interesting to record it. With regard to the case of tracheal growth, I am sorry there has not been more discussion, as it opens up a very important matter. Many of us are doing Army work, and must have seen a good number of men wearing tubes which they cannot do without. The question arises as to how to deal with these cases, and how to deal with this girl also becomes an important question. I have always found it very difficult to re-establish the patency of a trachea which has been occluded in the manner described. I have not much sympathy with a laryngostomy, because it is very difficult to get success with after-treatment. In answer to Dr. Kelson, the report on the character of the growth was made by Prof. Dean, our pathologist.

Fracture of Four Rings of the Trachea; Urgent Dyspnœa; Operation; Recovery.—Sir William Milligan.—A. S.—, female, aged twenty, a munition worker, while at her work got a scarf which she was wearing round her neck caught in rapidly revolving machinery with the result that she was all but strangled. Owing to the scarf giving way the patient's life was probably saved. Urgent dyspnœa, pain in the neck and expectoration of blood immediately followed. She was admitted to the Manchester Royal Infirmary and a tracheotomy was at once performed under local anæsthesia. On opening the wind-pipe four tracheal rings were found to be fractured. At the end of three weeks the tracheotomy tube was removed and the patient transferred to the throat department. Owing to increasing dyspnœa the tube was re-inserted. Direct examination showed a mass of granulation-tissue occupying the greater part of the lumen of the trachea opposite the second, third and fourth rings, and nearly occluding it.

By passing bronchoscopic tubes of increasing size the stricture in the trachea was dilated, and at the present moment the girl is wearing a large O'Dwyer's intubation tube.

Suggestions as to further treatment will be welcomed.

Case of Complete Laryngectomy.—Walter Howarth.—The larynx was removed for carcinoma on June 3. As there does not appear to be any development of a pharyngeal whisper, the question

of speaking apparatus arises. Opinions are invited as to the advisability of this, and the form of apparatus most likely to be useful.

Congenital Deformity showing a Nose with Four Nostrils.—Sir StClair Thomson.—The patient is a female infant, aged four weeks. The extremity of the nose shows three good-sized vestibules with two columellæ, and, on closer inspection, a smaller fourth orifice is visible. Further examination with a probe shows that it is the most external orifice on each side which is the true air-passage, the two supplementary orifices being internal to them. These latter orifices are blind *cul de sacs*, the smaller one being only about $\frac{1}{4}$ in. long, while the larger one passes inwards for $\frac{1}{2}$ in. There is a deviation of the end of the septum to the right: this is interesting in view of the general agreement that nearly all deviations are acquired and that most of them are traumatic.

Opinions are invited as to (a) the embryological origin, (b) the operation advised, and (c) the age at which treatment should be undertaken.

Nasopharyngeal Growth for Diagnosis.—Buckland Jones.—Patient, a male, aged twenty-eight, complains of nasal obstruction and occasionally of feelings of suffocation. There is no history of pain or hæmorrhage or of any previous operation. Opinions are requested as to (1) the nature of the growth, and (2) as to the advisability of operative interference.

Case of Fibrosarcoma?—A. L. Macleod.—Patient, a male, aged seventeen, by occupation a labourer. Duration of the disease, eight months. In January last he began to bleed from left nostril; this continued every few days, and he found difficulty in breathing. In March there was yellowish discharge from left nostril. No feeling of growth in the throat was present. He came to Leicester Infirmary in October. Two attempts to remove the growth with the snare failed, even a very thick wire breaking.

Pathologist's Report.—The section shows huge masses of bacteria (probably staphylococci) throughout the granulation-tissue. There is no evidence of neoplasm in the section.

ROYAL SOCIETY OF MEDICINE: THE SUMMER CONGRESS OF THE SECTION OF LARYNGOLOGY.

Her Highness Princess Marie Louise visited the Summer Congress of the Section of Laryngology at the Royal Society of Medicine on Saturday afternoon, May 3. She was received by Brig.-Gen. Birkett, C.B., C.A.M.C. (Montreal), Hon. President of the Congress, Dr. James Donelan, President of the Section of Laryngology, Sir Humphry Rolleston, K.C.B., President of the Royal Society of Medicine, Dr. W. Pasteur, Hon. Treasurer, Mr. J. Y. W. MacAlister, Secretary, and by Dr. Irwin Moore, one of the Hon. Secretaries of the Congress.

Her Highness was greatly interested in the exhibits of Plastic Facial War Injuries from the Queen's Hospital, Sidcup, shown by Major H. D. Gillies, R.A.M.C.

She availed herself of the opportunity of inspecting many of the rare books and manuscripts with which the Library is so richly endowed, as well as a most interesting collection of manuscripts and instruments belonging to the late Sir Morell Mackenzie, recently presented to the Royal Society of Medicine by Mr. Mager, upon which we hope to publish an account in a future number of this Journal.

ABSTRACTS.

Abstracts Editor—W. DOUGLAS HARMER, 9, Park Crescent, London, W. 1.

Authors of Original Communications on Oto-laryngology in other Journals are invited to send a copy, or two reprints, to the JOURNAL OF LARYNGOLOGY. If they are willing, at the same time, to submit their own abstract (in English, French, Italian or German) it will be welcomed.

PHARYNX.

Ludwig's Angina.—Voorhees. "The Laryngoscope," March, 1918 p. 177.

Male, aged fifty-one, for some years troubled with rapidly decaying teeth and pyorrhœa. In September, 1916, he began to suffer from toothache in the right lower canine. Two days later there was a small nodule below the jaw. Voorhees found both lower canines in the last stages of decay, and an "extractionist" removed both carious teeth under gas anæsthesia. On the following day the swelling had markedly increased under both inferior maxillæ, but on the left side had begun to reach upward over the face and downward into the cervical region. Ice was applied. Examination showed œdema of the faucial region. There was some difficulty in breathing. Under novocaine anæsthesia an incision was made from the angle of the left jaw to the symphysis menti. At the angle of the jaw a small quantity of very foul pus welled up into the wound. A cigarette drain was introduced. Temperature 104° F. Fever continued for a week. A second incision was made, about one inch above the clavicle. At this time the upper incision was occupied by a greenish-black, foul, sloughing mass. Black, tarry discharge mixed with gas was later drained from the lower wound. Undiluted peroxide was dropped into the wounds for twenty minutes at a time, followed by normal saline. The dressing was changed three or four times a day. At the end of one week the slough had separated, and it was possible to pick out masses of necrotic material with forceps. Healing went on rapidly, complicated, however, by a sequestrum of part of the lower jaw. Complete recovery.

J. S. Fraser.

Peritonsillar Abscess, followed by Osteomyelitis, Necrosing Encephalitis and Meningitis.—Andrew Wylie and Wyatt Wingrave. "Lancet," February 1, 1919, p. 178.

A woman, aged forty-eight. Attack of tonsillitis and right peritonsillar abscess. A gargle the only treatment. Five days later swelling of left eyeball and pain in throat and back of head. Worse eleven days later, and consulted ophthalmologist. Then seen by Dr. Wylie. Pain in head, neck and cervical region; speech not clear. Left ptosis and proptosis. Temperature 102° F. Peritonsillar abscess incised, and large quantity of foul pus evacuated. Twenty-five c.c. antistreptococcal serum given. The case went from bad to worse, proptosis appearing in the other eye two days later, and foul pus still escaping from the faucial incision. Next day she was drowsy, restless and sleepless. Temperature 104° F.; slight rigor. Twenty-four hours later unconscious. Right eye showed "choked disc," with venous thrombosis and small hæmorrhages. Temperature 102° F.; severe rigor. The patient con-

tinued thus for two days and then died. *Post-mortem*: A sloughing space about level of soft palate, which travelled back in deep cervical fascia to prevertebral area. Pocket of green pus traced in prevertebral muscles to basi-occipital and basi-sphenoid bones, the cancellar structure of which was a soft green foetid mass, extending into ethmoid and orbit. Diffuse purulent meningitis involving whole brain. Necrosing cortical encephalitis to a depth of 3 cm. over right temporo-sphenoidal area. All ventricles distended with green pus. Jugular bulb, sigmoid and lateral sinuses firmly thrombosed. Films of the pus showed streptococci, staphylococci, mycelia, and coarse forms of *Spirochaeta fétida* with some bacilli of xerosis type (diphtheroid). *Macleod Yearsley.*

Bacteriology of Tonsil Crypts.—**Maclay.** "The Laryngoscope," August, 1918, p. 598.

Maclay has examined 536 tonsils removed at operation (268 cases). The surface of the tonsil was cauterised and a sterile sharp knife used to cut cleanly into the crypts. From these crypts smears and cultures were made. The relation of smears and cultures shows decided variations in the cases studied. One type of organism may be found on a smear, while in the culture a good growth of some other organism appears with only a few colonies of the one found on smear. In almost all cases when on organisms were found in smears Maclay obtained on culture media a number of luxuriant colonies. Staphylococci were found fifty-three times in pure culture, streptococci and pneumococci each giving seventeen pure growths. (Tubercle bacilli only found once. This case had pulmonary tuberculosis and tubercular glands of the neck.) *Streptococcus hæmolyticus* was found seventeen times but the *Streptococcus viridans* only once. Only two cases showed negative smears and cultures. Three others showed organisms in smears but gave negative cultures, making five cases in all with negative cultures. Result: 268 cases—staphylococci, 166; pneumococci, 121; streptococci, 133; *Streptococcus hæmolyticus*, 17; *Streptococcus viridans*, 1; diplococci, 49; bacilli, 5; hay bacilli, 2; tubercle bacilli, 1. *J. S. Fraser.*

Results obtained by Tonsillectomy in the Treatment of Systemic Diseases.—**Layman.** "The Laryngoscope," February, 1918, p. 65.

Layman believes that the most important work in medicine in the last decade is the elucidation of the relationship of focal infection, especially that of diseased tonsils, to systemic disease. To-day tonsillectomy as a therapeutic measure in the treatment of systemic diseases is very popular, and is followed by improvement in the general health of the patient. Some have, however, claimed that the tonsil is held responsible for too many diseases, and that the beneficial effects do not justify the numerous enucleations. Layman has sent a *questionnaire* to laryngologists and internists requesting information regarding the results obtained by tonsillar enucleation in cases of arthritic, cardiac, renal and other systemic diseases. The reports include 894 cases: (a) Real cures: Arthritic, 68 per cent.; cardiovascular, 36 per cent.; renal, 81 per cent. (b) Considerable improvement: Arthritic, 20 per cent.; cardiovascular, 18 per cent.; renal, 5 per cent. (c) No improvement: Arthritic, 12 per cent.; cardiovascular, 46 per cent.; renal, 14 per cent. These are exceedingly satisfactory results.

The writer admits that tonsil enucleation alone does not have a beneficial effect on well-established conditions, viz. definite arthritic

changes and deposits, as ankylosis and fixation, chronic renal disease or chronic heart and blood-vessel disease, etc. Care must be exercised in the selection of cases. One observer said that the real cures in these cases followed only after a post-operative use of the autogenous vaccine and local treatment. Another observer reports a large series of thyroid enlargements with pronounced tachycardia as markedly benefited by tonsillectomy. Surgeons differ in their views as to the time of performing tonsillectomy, some advocating it before and others after thyroid operation. At the Mayo Clinic they do the partial thyroidectomy to relieve the symptoms, and the tonsillectomy to prevent, if possible, recurrence of hyperthyroidism in the remaining lobe.

Tonsillectomy should not be performed closely following convalescence from an acute purulent infection, such as middle-ear or nasal sinus suppuration. Reports show that such cases have developed septicæmia. Hospital *internes* and nurses, especially in recent active service with septic cases, should be given a temporary leave of absence before undergoing tonsil enucleation. The possibility of acidosis must be reckoned with. When this is suspected, examination of the urine for diacetic acid or acetone should be made before operating. Some operators advocate a pre-operative treatment of acidosis in all cases. Albuminuria following the removal of the tonsils has been attributed to the fact that a certain amount of infective material is squeezed out of the tonsils during the course of the operation and injected into the circulation.

Conservatism in tonsil enucleation in early childhood has been the practice of most laryngologists. Competent paediatricians, however, like La Fetra, of New York, have never been able to notice any abnormality in growth or development in those boys and girls whose tonsils were removed in early childhood. Children whose tonsils have been removed are much less susceptible to respiratory and gastro-intestinal disturbances of all sorts.

In view of these reports Layman asks, "Should we not seriously consider the removal of the tonsils as a wise prophylactic measure in early childhood in many more cases than formerly?" J. S. Fraser.

NOSE.

Very Rare Case of Foreign Body in the Nose.—C. Caldera. "Arch. Ital. di Otol.," vol. xxx, No. 1.

Peasant, aged twenty-one. At age of 16, when working in fields with pair of oxen received a severe blow of horn on the mouth, or more precisely on alveolar process of left maxilla at the level of canine tooth. Had severe bleeding from mouth and nose. Bleeding lasted four days, with great swelling of left cheek and eyelid. Loss of left canine tooth noticed. For about a year had pain in left half of face, but was able to continue his work. After fourteen or fifteen months had abscess of gum which was lanced by doctor and some pus and two splinters came out. Healed quickly, but purulent discharge persisted in nose. Called up to army, and after being in many hospitals had another splinter removed in January, 1917, and sent to writer as case of antrum suppuration.

Examination.—Left upper canine missing. Gums healthy and normal. Anterior rhinoscopy showed congestion of whole of left side of nose. On floor of nose at $2\frac{1}{2}$ cm. from anterior naris an obscure mass seen lying transversely, and surrounded by granulations and covered with mucus. Hard.

smooth foreign body. Extraction with forceps at first unsuccessful. Freed with scalpel and removed with some difficulty, as it was tightly jammed under the turbinate. Now seen to be a canine tooth all blackened except round the neck, where it was of normal colour. Some granulations were adhering to this part. There was no communication with the antrum.

J. K. Milne Dickie.

Vasomotor Rhinitis followed by Asthma and Symptoms of Paranoia.—Davies. "The Laryngoscope," June, 1918, p. 475.

Female, aged fifty-one. No history in the family of any mental disease. As a child she was bad tempered. First attack of vasomotor rhinitis occurred twenty years ago after dancing. The attacks recurred annually over a period of nine years. Ten years ago the attacks grew shorter, and did not develop until the end of August. At this time asthma and the nervous phenomena appeared. At first they consisted simply of marked excitement, but each year they increased in severity. "The patient becomes most excitable, is afraid that people are trying to poison her, or that her family are endeavouring to take her property away from her. Gradually she becomes quieter, sleeps better, and in twenty-four hours will be her normal self." The patient has never permitted a thorough examination of her nose and throat, but as far as it has been possible to investigate, these regions are normal.

J. S. Fraser.

Asthma from the Point of View of the Rhinologist.—R. Graham Brown. "Med. Journ. of Australia," December 7, 1918.

Asthma has always a neuropathic basis. In addition to this it has numerous and varied exciting conditions. In considering treatment a correct grouping is necessary. It would be absurd to treat asthma due to aortic aneurysm by cauterising the nose. On the other hand, if the symptom is due to pressure in the middle turbinial region mere change of climate is inadequate. This grouping is described in the paper, and its bearing on the treatment employed and the prognosis is indicated. Sub-group No. 2: Hypersensitive nasal mucous membrane and so-called asthma spots, where various intra-nasal deformities exist, giving rise to contact and intra-nasal pressure. Good results follow intra-nasal treatment. Brown speaks with high appreciation of the method of Francis, "which is entirely his own." He regrets that many medical men "who profess to follow Francis" have not the slightest idea of his "streak" cauterisation. Francis produces as little destruction as possible. He is guided in his treatment by its effect on the blood-pressure. (1) Blood-pressure 155 mm. Hg., outlook excellent; (2) blood-pressure 130–155 mm. Hg., not so good; (3) blood-pressure below 130 mm. Hg., seldom improved by cauterisation. Robertson, of Brisbane, and now Brown, of the same locality, support this theory of Francis. Their views deserve consideration, and if generally supported by the experience of other observers, a useful guide in the treatment of asthma by intra-nasal methods will be established.

A. J. Brady.

Asthma Considered in its Relationship to the Vegetative Nervous System.—F. M. Pottenger (Monrovia). "Amer. Journ. Med. Sci.," March, 1918.

The vegetative, involuntary or automatic nervous system is divisible into two mutually antagonistic portions, the one originating in the thoracic and upper lumbar segments of the cord and known as the

sympathetic system, the other arising from the medulla, bulb, and sacral portions of the cord, comprising the vegetative fibres of the third, seventh, ninth and tenth cranial nerves as well as those in the pelvic nerve, and known as the greater vagus. The author's view is that asthma is a disturbance in function, consisting of an increase in the tonus of that portion of the greater vagus nerve which supplies the bronchial musculature and mucous membrane. Its causes may be as diverse as the irritants which may be applied to the nerve centres which give origin to the pulmonary fibres, or to the peripheral nerves that are in reflex relationship with them. As all toxæmias which are sufficiently severe may produce the toxic syndrome, so all irritations, either reflex or central, which produce sufficient stimulation of the nerve-cells giving origin to the pulmonary filaments of the vagus may produce asthma. Patients who show increased tonus in the pulmonary branches of the greater vagus (asthma) are prone to have increased vagus tonus in one or more other organs. Hay-fever, hyperchlorhydria, spastic constipation and intestinal stasis are commonly found in patients who suffer from asthma.

Thomas Guthrie.

A Vaccine for the Treatment of Bronchial Asthma: Report of Twenty Cases.—J. M. Hutcheson and S. W. Budd (Richmond). "Amer. Journ. Med. Sci.," June, 1918.

Bronchial asthma has now, from the standpoint of ætiology, been permanently removed from among the neuroses, and fully explained as a manifestation of protein sensitisation. The writers believe that the specific protein exists in the bronchial secretion of the patient himself; that it is elaborated by the bacterial content of the sputum; and that it may be recovered in a suitable form for use in bringing about immunity.

A mixed vaccine made from the sputum by incubating with broth and a drop or two of guinea-pig serum was used in twenty cases. Each cubic centimetre of the suspension contained from 500 to 1000 million of the organisms; the initial dose was 5 minims, and each subsequent dose was increased by 1 minim up to, but not beyond 15 minims. The injections were in most cases given twice a week. In twelve of the cases complete relief from attacks was obtained after one to five injections, and this had persisted up to the time of writing—the longest period being sixteen months and the shortest six weeks. In five cases distinct improvement was noticed. In two cases no effect was produced, while in one the injection seemed to increase the paroxysms—a result which was thought to be due to the fact that too long an interval was allowed to elapse between the injections.

Thomas Guthrie.

LARYNX.

Acromegaly of the Larynx.—Chevalier Jackson. "Journ. Amer. Med. Assoc.," November 30, 1918.

Four cases of acromegaly are here reported with laryngeal symptoms, for which for the first time a doctor was consulted. The cases had not been previously diagnosed. In one of them considerable ossification of the laryngeal cartilages had taken place. The following conclusions are drawn:

(1) The larynx should be examined in every case of hypophysial abnormality. (2) The overgrowth characteristic of acromegaly in some

cases involves the laryngeal cartilages and soft parts. (3) Acromegalic changes in the larynx may produce stenosis sufficient to require tracheotomy to prevent asphyxia, dyspnea being added to by impairment of the glottic movements, resulting in a defective hectic cycle. (4) In three out of four cases the laryngeal mucosa was normal. In one the chronic laryngitis present was probably a coincidence. (5) In three of the four cases the laryngeal image was not symmetrical, though the laryngeal enlargement seemed so by external palpation. (6) In all cases of apparent hyperplasia of the larynx acromegalic overgrowth should be listed for diagnostic exclusion. (7) Laryngeal examination should be recorded as a routine in all cases of hypophyseal abnormality for the accumulation of data. (8) Altered voice in acromegaly may be due to laryngeal changes as well as to alteration in the resonating cavities, lingual enlargement, etc.

J. K. Milne Dickie.

A New Camp Disease of the Larynx: "Pneumococcus Ulcerative Laryngitis."—**Capt. F. D. Owsley.** "Annals of Otology," xxvii, p. 874.

Claimed to be a form of laryngitis undescribed in the literature. Founded on 120 cases. The initial stage is a bilateral ulceration of the vocal cords, usually on the anterior third, elliptical, and involving the free borders. A specific local infection is claimed as the cause. In forty cases smears showed the pneumococcus to be the only constant and predominant organism present. Streptococcus, staphylococcus and *Micrococcus catarrhalis* were occasionally present. The author considers his findings and conclusions supported by the large number of pneumococcus infections prevailing in the camp (Camp Travis, San Antonio, Texas). Practically the only symptom was aphonia (85 per cent.). Many had night paroxysms of cough. The only local treatment found useful was applications of silver nitrate (beginning with 2 per cent. and increasing to 5 per cent.).

MacLeod Yearsley.

Laryngeal War Injury: Death from Acute Miliary Tuberculosis.—A. Luzzati. "Arch. Ital. di Otol.," vol. xxx, No. 1.

A case in which a soldier was hit in the throat, shoulder and leg by shell fragments. The projectile passed through the thyroid cartilage from side to side. When first seen the entrance wound was discharging pus; exit wound closed. Patient suffering from aphonia, violent cough with copious purulent sputum, and difficulty in swallowing. No history of previous illness.

Examination.—Epiglottis pale; infiltration of false cords. Posterior third of right cord showed large loss of substance and whitish secretion. Left cord also infiltrated and red with irregular margins. Cords approached on phonation.

Examination of chest showed nothing notable at the bases, but feeble breath-sounds at the apices. No crepitations. Nothing to note in other organs.

Patient improved with simple local treatment, and larynx showed less inflammation. Three weeks after admission had a rigor, temperature rose to 39° F., wound discharged quantity of pus, cough became worse with copious secretion, respiration rapid. Fine crepitations all over chest. Sputum contained tubercle bacilli. Patient died four days later. At autopsy some small cavities found at apices of lungs with dense connective-tissue walls. Lower parts of lungs covered with miliary tubercles.

Miliary tubercles also found in intestines. Larynx showed extensive ulceration of posterior surfaces of epiglottis and of both arytenoids. Mucous membrane nodular. False cords thickened. Right cord ulcerated, left thickened. Septic track seen going through left side of cricoid to the surface.

Writer believes that the septic wound became secondarily infected from a latent tuberculosis of the lungs. *J. K. Milne Dickie.*

An Implantation Cyst of the Larynx.—Dean and Gregg. "The Laryngoscope," February, 1918, p. 74.

Dean and Gregg state that an implantation cyst is one which arises from the accidental intrusion into the subcutaneous or submucous tissues of epithelial cells which retain their vitality. It may be looked upon as an acquired or traumatic dermoid. *Case report:* Female, aged fifty-eight, had pulmonary tuberculosis of four years' duration; for six months recurring attacks of hoarseness; no dysphagia. Examination of the larynx revealed marked inter-arytenoid infiltration. Treatment included suspension and curettage of the diseased areas in the larynx every two weeks. Four months after the beginning of the treatment the larynx was declared to be apparently healed. Six months after the patient was discharged she returned for the "routine follow-up" examination. The writers found a dome-shaped elevation in the interarytenoid space. The patient was suspended and the mass removed. Microscopic examination showed that the surface of the cyst was covered with squamous epithelium, which was practically normal. In the underlying connective tissue there was a small cyst lined with squamous epithelium, of the same type as that which covered the surface. The cyst had no connection with the surface epithelium. Its cavity contained a small amount of granular material. *Diagnosis:* Implantation epithelial cyst. At subsequent visits the larynx was found to be apparently healthy.

J. S. Fraser.

Cartilaginous Tumour of the Larynx.—New. "The Laryngoscope," May, 1918, p. 367.

New states that cartilaginous tumours of the larynx occur but rarely—forty-seven in all recorded up to recent times.

Classification.—(1) Chondromas, invading the mother-substance—most cases malignant; (2) Mixed tumours, *e.g.* myxochondromas; (3) inflammatory; (4) general hypertrophy of the cartilages of the larynx.

New reports the following case: Male, aged forty-four, hoarse for four years. Twenty-three years previously he was hit by a baseball over the larynx. Six months before his visit tracheotomy was performed on account of dyspnoea. External examination showed a tumour about 1.5 in. square, rounded in outline, bony, hard, and fixed to the right side of the larynx. Laryngoscopy showed the right cord, the false cord, and aryteno-epiglottic fold displaced toward the middle line, a small slit being left for the passage of air. Operation under novocaine anaesthesia. The tumour invaded the thyroid and cricoid cartilages and the upper part of the trachea. Microscopic examination showed the growth to be a chondroma. The tumour could have been shelled out, but as this would have necessitated a large opening into the larynx and trachea, which would have destroyed the voice, it was thought best to leave a thin shell of the tumour. The wound was closed. Convalescence was favourable. Two years later no change in the voice and no sign of recurrence. The larynx was in the same condition as before.

New has collected nine recent cases. The cricoid was involved in eight, the thyroid in two, and the arytenoid in one. *The normal appearance of the mucous membrane of the entire larynx is characteristic of cases of cartilaginous tumours.*

Prognosis and Treatment.—Three patients died of suffocation before tracheotomy could be done. One died following tracheotomy. Of fifteen patients operated on by the external route, five died from pulmonary complications shortly after operation and five improved for varying periods of time.

J. S. Fraser.

E.A.R.

Studies on the Origin of the Labyrinthine Fluid.—Otto Fleischmann.

"Arch. f. Ohren.," Bd. cii, Heft 3-4, 1918.

The writer has attempted by means of vital staining to determine from the presence or absence of the so-called pyrrol or wander-cells whether the labyrinth fluids are independent secretions or are simply cerebro-spinal fluid. Pyrrol cells are found in organs with an internal secretion, but not in those with an external secretion, with the exception of the kidney. Cats, guinea-pigs and rabbits were injected with trypan blue or isamin blue. The results of vital staining of the inner ears were completely negative. There was no trace of blue in the labyrinth. In the middle ear numerous pyrrol cells were found. The choroid plexus also showed large numbers, and there were even a few in the bony interspaces. The writer concludes that "in all probability there is no secretion of labyrinthine fluid in the inner ear, and that the endo- and perilymph are probably not an independent secretion, but are derived from the cerebro-spinal fluid."

J. K. Milne Dickie.

The Cotugno-Helmholtz Theory of Hearing.—G. Gradenigo.

"Arch. Ital. di Otol.," vol. xxix, No. 3, September, 1918.

The writer shows how in 1761 Domenico Cotugno propounded a theory of hearing very similar to that elaborated a century later by Helmholtz. Up till Cotugno's time anatomists believed that the labyrinth was filled with air. Valsalva had regarded the basilar membrane as a resonating board vibrating in air, but erroneously thought that it was broader at the base than at the apex of the cochlea. Cotugno demonstrated that the labyrinth is constantly filled with fluid. He described in detail the basilar membrane, the vestibule, the two windows, the helicotrema and the two aqueducts. He showed that the basilar membrane became wider towards the apex. He established definitely that the aqueducts of the cochlea and vestibule were for the passage of labyrinthine fluid and were not venous canals. He saw the utricle indistinctly, but mistook it for a septum dividing the vestibule into two.

As for the mechanism of hearing, he regarded the basilar membrane as a series of tense strings of varying length, each of which was set in harmonic vibration by a definite tone.

Cotugno was born at Ruvo in 1736. He went to the Hospital for Incurables at Naples at the age of 17, and graduated in medicine at 20 in Salerno. At the age of 23 he was nominated Professor of Surgery for Internal Students. In 1761 he published his dissertation "*De aquæductibus auris humanæ internæ*" in Naples. During his life he acquired wide fame as an anatomist and clinician.

The credit for the introduction of the resonance theory is undoubtedly due to Cotugno, though owing to the state of knowledge of his time and the inadequate means of research at his disposal many of his details were inaccurate.

J. K. Milne Dickie.

Comparative Researches on the Lesions Caused by Air-conduction and Body-conduction of Floor Vibrations on the Auditory Apparatus.

—K. Wittmaack. "Arch. f. Ohren.," Bd. cii, Heft 1-2, 1918.

In a previous work the writer had been led to conclude that, besides those caused by purely air-conduction, lesions could be produced by conduction through the body alone.

In order to determine this more exactly an apparatus had to be contrived in which air-conducted sound was either too low in the tone scale or of too weak intensity to damage the ear. Two series of experiments were made. In the first series guinea-pigs were kept in cages on a long brass plate, on one end of which two hammers beat continuously, making a loud, high-pitched note. A control was made by keeping other guinea-pigs on an identical plate, but on which there was no hammering. The animals were exposed to this noise for twelve hours daily for a period of two to five months.

The results obtained were that the organ of Corti and the corresponding nerve-cells were completely destroyed in the basal coils of the cochlea. The animals on the control plate showed identical lesions. It is also worthy of note that the animals killed after only two months' exposure did not differ in degree from those killed after four months' exposure. From this it seems certain that the maximum of damage caused by sound conducted purely by air is reached comparatively quickly, and that with sounds of constant intensity prolongation of the exposure does not necessarily produce greater lesions.

One of the animals was exposed to the sound for nearly five months, and in this case, besides the lesions in the basal coils, there were some additional changes in the apical coil, with an intact region in between. As is shown by the following series of experiments, this was due to the effect of vibrations transmitted through the body.

In the second series of experiments the conditions were the same, except that a layer of felt was interposed between the hammers and the brass plate. As a result of this the sound was very much damped and the tone was deepened into a much lower key. The vibrations of the plate were easily perceptible to the finger, though only heard with difficulty. The animals were exposed to this for six to eight months. The control animals were absolutely normal and showed no trace of any damage by sound-waves. The animals on the vibrating plate, on the contrary, showed obvious characteristic changes, viz. reduction of nerve-cells and fibres in the upper windings of the cochlea, especially in the region between the apical and second coils. At the same time there was distinctly seen destruction of the sense-cells of the organ of Corti, while there was no change in the supporting cells. In these animals also the lower windings were absolutely normal.

These results agree with those of the author's experiments of ten years ago. The results of vibrations conducted through the body thus differ most decidedly from the lesions produced by purely air-conducted sound. In the former one finds that isolated nerve-cells and fibres and the sense-cells of the organ of Corti are destroyed, while at the same time the supporting cells are intact. In the latter the whole organ of Corti is destroyed.

These experiments show that where the intensity of the air-conducted sound is not enough to cause damage, but where at the same time there is strong vibration of the floor, lesions in the cochlea can be produced by vibrations conducted purely through the body.

The practical result of these researches is that in occupational deafness the initial lesions are produced by air-conduction and remain stationary, but that the later increase in deafness is due to lesions caused by vibrations transmitted from the floor through the body. Hence it becomes doubtful if plugging the ears will have any effect in checking the progress of the deafness.

J. K. Milne Dickie.

BRONCHI AND ŒSOPHAGUS.

A New Diagnostic Sign of Foreign Body in Trachea or Bronchi—the "Asthmatoid Wheeze."—Chevalier Jackson. "Amer. Journ. Med. Sci.," November, 1918.

The writer draws attention to a sign which he has found to be present in a fair proportion of cases of foreign bodies in the trachea or bronchi. He considers it to be of diagnostic value especially in instances where the foreign body is not opaque to the X rays, and where physical examination of the chest reveals very slight or no pathological changes in the lung. It occurs where the foreign body does not completely occlude the passage in which it lies. It is heard by placing the ear opposite the patient's open mouth. When not at once heard, it may be elicited by asking the patient to expel forcibly the residual air. It is also heard better after expectoration of secretion, unlike the wheezing of bronchitis. The presence of a croupy cough points to the larynx rather than the trachea or bronchi, while the asthmatoïd wheeze only occurs in bronchial or tracheal cases. Several cases are quoted demonstrating the value of the asthmatoïd wheeze when present, and incidentally of a careful physical examination of the chest in all foreign-body cases, whether already localised or not. The sign is of less value if negative. "Being heard at the open mouth it is of no localising value as to which lung is invaded, though there is hope that further study may develop perceptible differences between tracheally and bronchially lodged foreign bodies." It is of more value in a recent case than in one in which secondary complications have set in.

"The asthmatoïd wheeze was not present in any case in which a smooth, rounded body was so tightly wedged in a bronchus that no air could pass it. Smoothness or roughness of surface seem important chiefly as they influence tightness of inspiration."

J. K. Milne Dickie.

Foreign Bodies in the Larynx, Trachea, Bronchi, and Œsophagus Ætiologically Considered.—Chevalier Jackson. "Trans. Amer. Med. Assoc.," 1917, pp. 36-56.

Chevalier Jackson writes from the experience of over 600 cases. One of the principal causes of foreign bodies in the air- and food-passages is carelessness in putting inedible substances into the mouth, carelessness in eating and drinking, and inadequate supervision of young children.

In 81.6 per cent. of the cases the patients were under 15 years of age. All cases of water-melon seeds in the bronchi were in children, as were

also coins in the cesophagus. Nearly all cases of meat in the unstrictured cesophagus occurred in adults.

The influence of poverty in aetiology is fairly considerable, probably due to insufficient care of children.

Dental and surgical accidents were responsible for a certain number of cases.

J. K. Milne Dickie.

Difficult Mechanical Problems of Bronchoscopic Foreign-Body Extraction.—Chevalier Jackson. "The Laryngoscope," October, 1917, p. 725.

Jackson reminds us that to pull upon a sharp, entangled foreign body in the bronchi or cesophagus is to court disaster. When a difficult case is encountered Jackson studies his previous cases of the same kind. He next does a bronchoscopy (or cesophagoscopy) with all previously used instruments at hand in case they may be adequate. If they are not, he takes mental notes and measurements, and then proceeds to make a series of probes or other instruments, and tests them on the work-bench, using a piece of rubber tubing as a manikin. One end of the tubing is held in a small vice. If the newly made instruments do not enable the endoscopist to disentangle the foreign body in this manikin, it is obvious that they will not enable him to do it in the living patient. Having solved the problem on the manikin, the real problem is then attempted, and usually with success. Jackson is able to modify his probes by means of a spirit lamp and sterile pliers, which are ready in the operating room. The new instrument must be allowed to cool slowly in order to avoid brittleness. For practically all purposes annealed steel serves best. The tools needed for this work are mainly those of the jeweller. A good precision lathe is essential, also a small jeweller's bench, vice, files, pliers, anvil and polishing tools.

Jackson gives an illustrative case of an infant, aged four months, which aspirated a bar pin. Tracheotomy had already been done, and two attempts at removal made by other endoscopists. On admission the infant's temperature was 104° F., pulse 158, and respirations 52. The breath was foul, the lips cut, and muco-pus streaming from a tracheotomy wound. The infant was obviously suffering from surgical shock and sepsis, and only began to improve very slowly. In three weeks the patient was in fairly good condition. A radiogram now showed the bar pin in the left bronchus, about 6 mm from the bifurcation. Without anaesthesia the 4 mm. bronchoscope was passed through the mouth to the left bronchus, which was filled with pus. The walls were so swollen that the pin was hidden. No attempt at removal was made at the time. Jackson concluded that the pin had been at first lying loose in the trachea, and that traction had caused the pin-point to enter the tracheal wall. To liberate the point the pin had been pushed downwards, and again traction had caused the point to enter the wall of the bronchus. The greatest difficulty arose from the fact that the oedema of the mucosa left no room at the side of the pin in which to work, as the stem bronchus of a child of four months is not over 3 mm. in diameter.

The method finally worked out on the manikin was as follows: A fine bent probe was formed to the proper curve to be insinuated by rotation, while a fixing rod gently held the proximal end of the pin in position. Rotation of the bent probe now closed the pin, thus rendering withdrawal by means of forceps safe and not difficult. No general or local anaesthetic was used. The child made a good recovery.

J. S. Fraser.

MISCELLANEOUS.

Disruptive Phenomena in Gun-shot Injuries.—S. G. Shattock. "Proc. Roy. Soc. Med.," July, 1918, Section of Pathology, p. 47.

Whether or not a disruptive effect will take place in a hollow organ, assuming the missile to be at high speed, depends upon the nature of its contents. Some hollow organs, like the pharynx, larynx and trachea, are normally open and filled with air. Some are normally in a closed, *i. e.* strictly empty condition, like the œsophagus; some contain fluid and gaseous contents, like the stomach and intestine.

In doubly perforating wounds of the pharynx, larynx and trachea, the apertures of entry and of exit are, as might be anticipated, small and of equal size. The absence of disruptive effect in the case of these organs is, it is hardly necessary to observe, due to the compressibility of the air contained within them, and its free communication with the exterior. In regard to their walls, these are of insufficient mass, *i. e.* too thin, to allow of the production of such an effect upon them; the wall is simply perforated like the diaphragm, or the skin, or the peritoneum.

Specimens of gun-shot wounds involving the larynx, others of wounds involving the trachea, and lastly of those involving the œsophagus are shown and described.

Archer Ryland.

A Further Investigation into Influenzo-pneumococcal and Influenzo-Streptococcal Septicæmia: Epidemic Influenzal "Pneumonia" of Highly Fatal Type and its Relation to "Purulent Bronchitis."
—Major A. Abrahams, Capt. Hallows, and Lieut.-Col. H. French.
"Lancet," 1919, vol. i, p. 1.

This is a continuation of the work published in the *Lancet* on September 8, 1917, and contains several matters of considerable rhinological, otological and laryngological interest. These may be enumerated as follows, and refer to the recent epidemic:

Epistaxis.—May be alarming. Has been an unusually common phenomenon, sometimes at the beginning, more often after the patient has gone to bed. Epistaxis is not confined to the pneumonic cases. The blood has been generally bright red, and the prevalence acquires greater significance by the frequency of the *post-mortem* finding of pus in sphenoidal and ethmoidal sinuses teeming with pneumococci (and sometimes Pfeiffer's bacillus). It is of the character of an inflammatory erosion of an arteriole, suggesting that the pneumococci reach the lungs *via* the nose, nasopharynx and accessory sinuses and not *vice versa*. Hence prophylactic gargling and nasal douching is wise in the early stages of all influenza cases.

Laryngeal Symptoms have been more frequent recently, varying from huskiness to complete aphonia. Not necessarily a prelude to pneumonia.

Otitis Media.—In a number of cases the hearing has been much impaired, even to temporary stone deafness. This is probably middle ear, but quinine prophylaxis may be a factor, although complete deafness has occurred where no quinine, aspirin, or salicylate has been given. The chief cause is probably pneumococcic infection *via* the Eustachian tube, as deafness has in some cases been relieved by perforation and discharge. In one case the discharge was almost pure blood. The radical mastoid operation may be required.

Meningitis has not been met with. Meningococcal meningitis and

cerebro-spinal fever may, however, be mistaken for influenza unless bacteriologically disproved.

Post-mortem Findings.—*Tracheitis* (sometimes with *laryngitis*) and *bronchitis* are very common indeed, suggesting extension from above. The *thyroid gland* is considerably enlarged as a rule. In 19 out of 20 cases pus was found in the *sphenoidal sinus*—doubtless a contributory factor to the severe headache often complained of. The early onset of *sphenoidal sinusitis* is much against its origin as an infection from the lungs. This, with the frequency of *otitis media*, greatly emphasises the importance of the *nasopharynx* as the original site of infection—a practical point, which insists upon the simple antiseptic toilet of the throat and nose by healthy persons exposed to infection as well as in early stages of influenza. The solutions used by the authors in their practice were either pot. permanganat. 1:4000 or tinct. iodi one drachm to the pint; in addition, medical officers, nurses and orderlies wore gauze masks around the nose and mouth whenever in contact with patients.

Bacteriology.—The most striking feature was the frequency of streptococci, which were—(1) a long-chained streptococcus; (2) a short-chained streptococcus exhibiting a preponderance of diplococcal forms, results of nasopharyngeal swabs are given in the following table:

	Mild cases.						Severe cases.				Total
	1	2	3	4	5	6	7	8	9	10	
<i>Pneumococcus</i> . . .	+	—	—	—	+	—	—	—	+	—	3
<i>M. catarrh.</i> group . . .	+	—	+	+	+	+	+	—	—	—	7
<i>Streptococcus longus</i> . . .	—	+	+	—	—	+	+	+	+	—	7
<i>Diplococcus</i> . . .	+	+	—	+	+	+	—	+	—	+	7
<i>B. influenzae</i> . . .	—	+	+	+	—	—	—	—	+	+	5

In their *summary* the authors insist that "infection takes place in the upper respiratory passages and involves the accessory nasal sinuses, where a septic sinusitis develops. From this, and possibly other foci as yet undetermined, the toxæmia and septicæmia originate."

The investigation was made from 1000 cases.

Macleod Yearsley.

LISTS OF ORIGINAL PAPERS.

Amer. Journ. Med. Sci., March, 1918. (Abstracted by THOMAS GUTHRIE.)

POTTENGER, F. M. (Monrovia).—"Asthma Considered in its Relationship to the Vegetative Nervous System."

Amer. Journ. Med. Sci., June, 1918. (Abstracted by THOMAS GUTHRIE.)

HUTCHESON, J. M., and BUDD, S. W. (Richmond).—"A Vaccine for the Treatment of Bronchial Asthma: Report of Twenty Cases."

Amer. Journ. Med. Sci., November, 1918. (Abstracted by J. K. MILNE DICKIE.)

JACKSON, CHEVALIER.—"A New Diagnostic Sign of Foreign Body in Trachea or Bronchi—the 'Asthmatoid Wheeze.'"

Annals of Otology, Rhinology, and Laryngology, vol. xxvii, September, 1918. (Abstracted by MACLEOD YEARSLEY.)

LYSTER, THEODORE C.—XLVIII. "The Aviation Service of the Medical Department of the Army."

PIERCE, Major NORVAL H.—XLIX. "Oto-laryngology in the Army Medical Service."

COHEN, J. SOLIS.—L. "Early Laryngology in Philadelphia."

BECK, J. C.—XXVII. "Surgical Pathology of the Mastoid."

OWSLEY, F. D.—XXVII. "A New Camp Disease of the Larynx: 'Pneumococcus Ulcerative Laryngitis.'"

JONES, ISAAC.—LIII. "The Value of Ear Examination to the Neurologist."

BIGELOW, F. N.—LIV. "Types of Mastoid Structure, with Special Reference to their Differentiation by Means of Stereo-radiography."

DAVIS, W. B.—LV. "Anatomy of the Nasal Accessory Sinuses in Infancy and Childhood."

HOLINGER, J.—LVI. "The Spanish Grippe in Switzerland."

FAULKNER, E. ROSS.—LVII. "Two Cases of Sinus Thrombosis which Presented Unusual Difficulties in Diagnosis."

PERKINS, C. E.—LVIII. "Leucocytosis of the Spinal Fluid in the Diagnosis of Meningitis."

MOSEH, G. W.—LIX. "Benign Neoplasms of the Nasal Septum."

HARRIS, THOS. J.—XXVII. "Radium in Diseases of the Ear."

Arch. Ital. di Otol., vol. xxix, No. 3, September, 1918. (Abstracted by J. K. MILNE DICKIE.)

GRADENIGO, G.—"The Cotugno-Helmholtz Theory of Hearing."

Arch. Ital. di Otol., vol. xxx, No. 1, January, 1919. (Abstracted by J. K. MILNE DICKIE.)

CALDERA, C.—"Very Rare Case of Foreign Body in the Nose."

LASAGNA, F.—"Extraction of Projectiles from the Ear."

CALDERA, C.—"Plastic Surgical Treatment of the Stenoses and Atresie of the Auditory Meatus."

LUZZATI, A.—"Laryngeal War Injury; Death from Acute Miliary Tuberculosis."

GRADENIGO, G.—"Tubal Function and Aviation."

CALICETI, P.—"Plastic Method of the Auditory Meatus in Cases of Cicatricial Stenosis."

GRADENIGO, G.—"The Re-education of Hearing and Speech in the Deaf and the Mutes of War."

TORRINI, U. L.—"Syndrome of Gradenigo following a Case of Acute Mastoiditis complicated by Phlebitis of the Cavernous Sinus."

GRADENIGO, G.—"The Choice of Aviators from the Psycho-physiological Point of View."

Arch. f. Ohren., Bd. cii, Heft 1-2, 1918. (Abstracted by J. K. MILNE DICKIE.)

WITTMACK, K.—"Comparative Researches on the Lesions Caused by Air-conduction and Body-conduction of Floor Vibrations on the Auditory Apparatus."

Arch. f. Ohren., Bd. cii, Heft 3-4, 1918. (Abstracted by J. K. MILNE DICKIE.)

FLEISCHMANN, OTTO.—"Studies on the Origin of the Labyrinthine Fluid."

Journ. Amer. Med. Assoc., November 30, 1918. (Abstracted by J. K. MILNE DICKIE.)

JACKSON, CHEVALIER.—"Acromegaly of the Larynx."

Med. Journ. of Australia, December 7, 1918. (Abstracted by A. J. BRADY.)

BROWN, R. GRAHAM.—"Asthma from the Point of View of the Rhinologist."

Proc. Roy. Soc. Med., July, 1918, Section of Pathology. (Abstracted by ARCHER RYLAND.)

SHATTOCK, S. G.—"Disruptive Phenomena in Gun-shot Injuries."

The Lancet, vol. cxvii, February 1, 1919. (Abstracted by MACLEOD YEARSLEY.)

WYLIE, ANDREW, and WINGRAVE, WYATT.—"Peritonsillar Abscess, followed by Osteomyelitis, Necrosing Encephalitis, and Meningitis."

The Lancet, 1919, vol. i. (Abstracted by MACLEOD YEARSLEY.)

ABRAHAM, Major A., HALLOWS, Capt., and FRENCH, Lieut.-Col. H.—"A Further Investigation into Influenzo-pneumococcal and Influenzo-Streptococcal Septicemia: Epidemic Influenza 'Pneumonia' of Highly Fatal Type and its Relation to 'Purulent Bronchitis.'"

The Laryngoscope, vol. xxvii, October, 1917. (Abstracted by J. S. FRASER.)

JACKSON, CHEVALIER.—"Difficult Mechanical Problems of Bronchoscopic Foreign-body Extraction."

The Laryngoscope, vol. xxviii, February, 1918. (Abstracted by J. S. FRASER.)

DEAN and GREGG.—"An Implantation Cyst of the Larynx."

LAYMAN.—"Results obtained by Tonsillectomy in the Treatment of Systemic Diseases."

The Laryngoscope, vol. xxviii, March, 1918. (Abstracted by J. S. FRASER.)

VOORHEES.—"Ludwig's Angina."

The Laryngoscope, vol. xxviii, May, 1918. (Abstracted by J. S. FRASER.)

NEW.—"Cartilaginous Tumour of the Larynx."

The Laryngoscope, vol. xxviii, June, 1918. (Abstracted by J. S. FRASER.)

DAVIES.—"Vasomotor Rhinitis followed by Asthma and Symptoms of Paranoia."

The Laryngoscope, vol. xxviii, August, 1918. (Abstracted by J. S. FRASER.)

MACLAY.—"Bacteriology of Tonsil Crypts."

The Laryngoscope, vol. xxix, No. 1, January, 1919. (Abstracted by J. S. FRASER.)

JACKSON, CHEVALIER.—"Treatment of Laryngeal Stenosis by Corking the Tracheotomy Cannula."

DAVIS, G. E.—"The Blood-clot Dressing in Frontal Sinus Surgery."

BROWN, J. M.—“Acute Retro-pharyngeal Abscesses in Children.”

McKINNEY, R.—“Spontaneous Recovery from Lateral Sinus Thrombosis—a Case with very Unusual Features.”

SCHATZ, HARRY A.—“Ozæna—Experience with Vaccine Preparation and Use.”

ERSNER, M. S.—“Ozæna. 1. Vaccino-therapy. 2. Results of Serologic, Antigenic, and Food Anaphylactic Tests.”

CARPENTER, E. R.—“Central Deafness.”

SWIFT, W. B., and BEATTY, H. G.—“Speech Elements in Tabes: Sign and Treatment.”

SCRIPTURE, MRS. MAY KIRK.—“Negligent Speech.”

SAUER, W. W.—“Rational Tonsil Surgery.”

Trans. Amer. Med. Assoc., 1917. (Abstracted by J. K. MILNE DICKIE.)

JACKSON, CHEVALIER.—“Foreign Bodies in the Larynx, Trachea, Bronchi, and Esophagus: Etiologically Considered.”

REVIEWS.

Asthma. By ORVILLE HARRY BROWN, A.B., M.D., Ph.D. Pp. 330. Illustrated. London: Henry Kimpton, 1917.

The author states that this monograph is the result of nine years' study of asthma, and that it is in support of the “non-passive expiration theory,” which is the culmination of his work.

The basis of the thesis, “the non-passive expiration theory” of asthma, is explained in his introduction. He directs attention to certain anatomical and physiological facts bearing on the theory: (1) The large bronchi are firm-walled; (2) the smaller bronchioles have very thin walls; (3) the lobule is a wide expanse leading from the bronchiole, with many ramifications of respiratory bronchioles, atria, infundibula, and alveoli; (4) the bronchial vein courses along the bronchi, giving many minute branches to the mucosa of the bronchi; and (5) the right coronary artery, nourishing the right side of the heart, arises from the aorta. Then (1) the blood and lymph obey the movements of the chest just as does air; (2) under normal conditions inspiration is muscular and expiration passive; (3) forceful active expirations in coughing, dyspnea, etc.; (4) such expirations will interfere with the flow of blood into the chest in proportion to their force and suddenness; (5) interference with the flow of the blood is due to the fact that the intrapulmonic pressure is greater than atmospheric during expiration; (6) the increased pressure is induced primarily within the alveoli, infundibula, atria, etc., because of the “muffler-like” construction of the lobules; (7) the tension within the firm-walled bronchi varies relatively little from the atmospheric during either phase of respiration; (8) *therefore, during forceful expirations there is a tendency for the vessels of the mucosa to become greatly over-filled and distended, narrowing the lumen to such a grade perhaps as to interfere seriously with the exit of air.* (The italics are ours, and we think this statement is at least open to question.) (9) The right heart, during long periods of forceful expiration, because of the heightened pulmonic artery blood-pressure thereby engendered, may suffer serious strain, and thereby contribute materially to the damming of the blood and lymph to the large veins and immediate contributories.

The author continues: "Commonly non-passive expiration is indirectly caused by respiratory tract catarrh; and this involves the bronchi, inflames and swells the bronchial mucosa, causing it to narrow the lumen of the bronchi, and thus induce simple dyspnea. Laboured breathing causes force to be put on expiration, and thereby becomes potential asthma." It seems to us that acute bronchitis fulfils the conditions of bronchiolar inflammation and swelling, and yet as asthma is not a usual characteristic of bronchitis, though they may be associated, true asthma cannot be simply due to the resulting stenosis; and the author does not explain clearly the discrepancy between these facts and his theory.

A review of various historical observations and theories put forward by other authors is given fully with references, and this section alone shows the painstaking care he has taken to render himself conversant with the literature of asthma.

The chapters on the treatment of asthma are of great value, and the author at the outset considers treatment under two categories: (*a*) the treatment of acute attacks; (*b*) the treatment of conditions predisposing to and causing the paroxysms. He has found good service in the use of adrenalin, both hypodermically and by endobronchial administration, and prefers the latter. Morphine in combination with strychnine is praised. For treating conditions tending to asthma, respiratory drills have a large place. Intratracheal medication, *e.g.* inhalations of compound tincture of benzoin, oil of tar, menthol, etc., have been very helpful, while heroin is preferred to morphine when an opiate is required, and again the author passes in review the use of various drugs and methods of treatment that have been advocated by others.

No one can read this work without adding to his knowledge of the elusive affection termed "asthma," and in the presentation of his own as well as the theories of other writers there is useful food for reflection, even if the facts and views adduced in support of the author's non-passive expiration theory should leave the reader with a feeling that he still remains unconvinced that those conclusions are unassailable.

P. Watson-Williams.

Disturbances of Memory as a Result of Disease of the Ear. By VIKTOR URBANTSCHITSCH. Pp. 49. Berlin and Vienna: Urban and Schwarzenberg, 1918. Price 3.30 marks.

In an experience extending over many years the writer has observed a large number of cases of ear disease in which the memory was affected to a greater or less degree. In order to determine the frequency of this condition he carried out a series of memory tests on 220 patients, of which 20 had an affection of the external ear, 100 had middle-ear catarrh, and 100 had chronic middle-ear suppuration. In 12 cases the patients complained of a temporary loss of memory or great forgetfulness. Of these one had otitis externa, three had middle-ear catarrh, and 8 had middle-ear suppuration. Loss of memory occurs not infrequently after radical mastoid operations. In 5 cases this was very marked, and lasted several years. In one of these there was general forgetfulness, but especially loss of power of remembering figures. Another patient became very bad at remembering names, etc.

More common than general loss of memory is failure of memory in certain particular directions, *e.g.* counting, names, music, etc., while the memory is in other respects quite good. Seven patients had special difficulty in counting and remembering figures since the onset of middle-ear disease. In all cases there had been no difficulty in counting before

the onset of the disease. Loss of memory for faces occurred in a certain number of cases. A waiter who suffered from tubal catarrh often had periods of pain or feeling of pressure in the ear, and at those times could not recognise people whom he was in the habit of serving daily. Three cases complained of difficulty in remembering places. One of these, a cabman, aged twenty-six, who had known all the streets of Vienna well for years, became so much affected during a two years' middle-ear trouble that he very often had to ask his way to his destination. In two cases there was a loss of memory for music. Both patients were accomplished musicians.

Several cases of aphasia occurred. One of these, a teacher, aged twenty-six, who had known English and French very well, made very many bad mistakes since the beginning of her ear trouble. Another case, a colleague of the writer's, had loss of memory and aphasia to such an extent that he had great difficulty in carrying on his lectures. He had large, firmly-impacted plugs of wax in both ears, after removal of which he had no further trouble with his aphasia.

One of the most interesting cases of loss of a foreign language was that of an elderly lady, a German by birth, who had been for over ten years a teacher in a French school in Tiflis. She had suffered for several months from progressive deafness and at the same time lost the power of speaking French till, when seen by Urbantschitsch, she had almost entirely forgotten it. After six weeks' treatment her hearing improved very markedly, and at the same time her command of French returned, although she had not in the meantime been practising it. All the time she had a complete mastery of her native language.

With regard to the causation of memory disturbances in connection with ear trouble, Urbantschitsch is of opinion that reflex vasomotor disturbances have a great deal to do with the condition. In support of this idea he quotes the following case: "One evening in the Poliklinik a very nervous female ear patient suddenly became very much worse in the out-patient department. It was thought advisable to send her home, but it was found that she could not remember her address. She asked for some amyl nitrite to smell as she had had it before for headaches. When she had inhaled a few drops and produced a flush on her face she at once became better. When she was told that she would get a bed in the klinik for the night since she did not know her address she answered with surprise that she knew it exactly, and immediately gave it. In her case-sheet it had been noted that the patient suffered from great forgetfulness, and could give very little information about herself for the last four months. She was given some more amyl nitrite next day after an unsuccessful attempt to get a history, and during the period when her peripheral vessels were dilated she was able to give the desired information."

Several other observations are quoted, all of which led the writer to the conclusion that the memory disturbances are principally vasomotor. A colleague also had taken the blood-pressure in the temporal arteries of both sides in a series of cases of unilateral middle-ear disease, and had found regularly that the blood-pressure was higher on the diseased side.

Urbantschitsch made a large number of experiments to test the memory of patients. He showed them pictures and other objects for a moment, and then asked them to describe them from memory, and by visualising them mentally. He carried out similar tests with the ears plugged with cotton-wool, and found that this caused a very marked improvement of the power of recalling the details of the objects shown.

Similar tests were also carried out while pressure was exerted on the carotid vessels. In these cases also there was a marked impairment of memory, which improved immediately the pressure was removed. The details of these various experiments are given at length by the writer, as are also the details of the 220 cases already mentioned. He sums up the results of his investigations as follows:

"Disturbances of memory occur not infrequently in disease of the organ of hearing, especially of the middle ear. In certain cases they manifest themselves as general amnesia, but more commonly as loss or weakening of memory in one special direction, as in the case of names, figures, persons, places, music, speech, etc. The disturbances of memory last in isolated cases a fairly long time, but it is more common for them to occur only now and then and in varying degree. They are often dependent on the changing condition of the disease of the outer or middle ear, and pass away with the cessation of the ear trouble. Disturbances of memory may also be brought about by operations on the middle ear. How the memory may be influenced by ear conditions is shown by the influence of the ear on the central nervous system, as can be recognised in its motor, sensory and psychical relationships. Of special importance is the reflex vasomotor effect of ear conditions on the blood-vessels of the brain, which is known to affect memory to a high degree. In this respect the proof of an increase of blood-pressure brought about by the ear is worthy of notice. Experimentally one can prove, with the help of optic and acoustic memory pictures, that plugging of the outer and middle ear, as also pressure on the carotid, has an inhibitory effect on the memory."

J. K. Milne Dickie.

The Twin Ideals: An Educated Commonwealth. By SIR JAMES W. BARRETT, K.B.E., C.B., C.M.G., M.D., M.S., F.R.C.S. 2 vols. With maps and diagrams. London: H. K. Lewis & Co., Ltd. Price 25s. net.

Sir James Barrett, of Melbourne, in addition to being a noted ophthalmologist and aurist, has devoted much time to disseminating sane and progressive views among the democratic people of Australasia, and these volumes represent a collection of many of his articles, essays, and addresses on educational subjects.

The author writes in a very readable and easy style. Like the American he quotes, he himself is "a man of very great culture, but does not let that worry him." Consequently, as one reads on in these books one is very apt to miss the fact that what is being read is the artistic and finished product of a cool, temperate thinker and observer who has also himself read deep and wide.

The themes handled are those pertaining to education in the widest sense of the term, and range from the milk question to grand opera and orchestral music.

Anyone who wishes to get into touch rapidly and easily with progressive educational movement cannot do better than make himself master of these quite fascinating studies.

Dan McKenzie.

Catalogue of Lewis's Medical and Scientific Circulating Library, including a Classified Index of Subjects. New Edition, revised to the end of 1917. London: H. K. Lewis & Co., Ltd., 1918.

Messrs. Lewis's scientific library is well known to all London and many provincial medical men, and needs no puffing. The Catalogue now before us gives a clear idea of the large collection of books the subscriber

may browse over, including as it does works on all kinds of scientific activity as well as on medicine. Geikie's geological works, Frazer's "Golden Bough," in all the glory of its seven resplendent and intricate branches, and even such semi-scientific productions as Sir Oliver Lodge's "Raymond," are all included within its wide embrace. Subscribers to Lewis's Library need never know a dull Sunday.

Dan McKenzie.

Harvard Health Talks: Adenoids and Tonsils. By ALGERNON COOLIDGE, M.D., Professor of Laryngology in Harvard University. Pp. 46. Cambridge: Harvard University Press, 1916.

A sensible and brief exposition of the subject, with a tendency towards conservatism of view and practice.

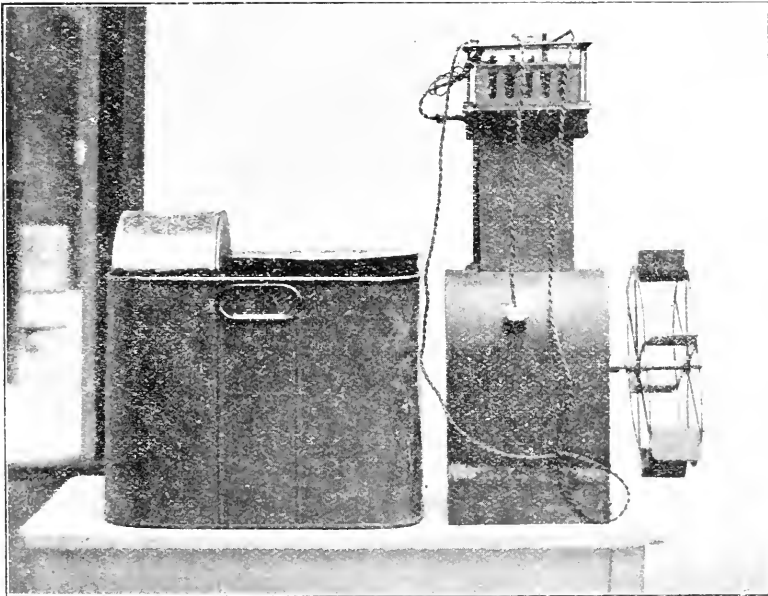
The puzzle of the function of these lymphoid masses is glanced at, and the suggestion thrown out that they may be antitoxin-producing glands.

Dan McKenzie.

NOTES AND QUERIES.

A NOISE-PRODUCING MACHINE.

The apparatus here figured is the invention of a lady who was a sufferer from a disturbing form of tinnitus aurium. She had it made in order to produce sufficient external noise in her quiet bedroom in the country to enable her to get sleep.



A

B

The paddle with its motor (B) wire placed inside A, a tin vessel containing water.

It consists of an electrically-driven paddle which with its motor was placed inside the tin vessel (on the left of the illustration), the latter being half filled with water. In this way a continuous splashing sound was produced and the patient was able to sleep.

Without this machine, as when she was on a visit to some other still locality, she had to face a long wakeful night, the multifarious intrinsic noise making sleep impossible.

As time went on, however, deafness supervened, and, as is usually the case the tinnitus became less and less obtrusive, until finally she was able to sleep without her "splasher," and she then made it over to me for any of my patients who might be similarly afflicted.

Curiously enough, and fortunately for our peace, tinnitus very rarely causes insomnia, and so far I have not encountered anyone else to whom the splasher would be of service.

DAN MCKENZIE.

FORTHCOMING MEETINGS.

SOCIÉTÉ BELGE D'OTOLOGIE ET DE LARYNGOLOGIE.

The first meeting of this Society since 1914 will be held next July in Antwerp. It is hoped that the facilities of travel will be so improved by that time that many oto-laryngologists will be glad of an opportunity of meeting their Belgian colleagues again. We understand that some French and Italian *confrères* will be present at Antwerp and we trust that England and America will be well represented. The Congress is under the Presidency of Dr. Trétop, and the Hon. Secretary is Prof. van den Wildenberg, 110, Avenue des Arts, Antwerp, Belgium.

ROYAL SOCIETY OF MEDICINE, LARYNGOLOGICAL SECTION.

The next meeting of the above Section will be held at 1, Wimpole Street, London, W. 1, on Friday, June 6, at 4 p.m.

BOOKS RECEIVED.

The War Work of the Y.M.C.A. in Egypt. By *Sir James W. Barrett, K.B.E., C.B., C.M.G., F.R.C.S.(Eng.)*, with a Preface by *Sir E. H. Allenby*. Pp. xx + 212. 23 Plates and 3 Maps. Demy 8vo. London: H. K. Lewis & Co., Ltd. Price 10s. 6d. net.

Catalogue of Lewis's Medical and Scientific Circulating Library, including a Classified Index of Subjects with the Names of those Authors who have treated upon them. Second Edition, revised to end of 1917. Pp. 492. Demy 8vo. London: H. K. Lewis & Co., Ltd. Price 12s. 6d. net: to Subscribers, 6s. net.

THE
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**SOME SUGGESTED ALTERNATIVES TO OPERATION FOR
ADENOIDS AND ENLARGED TONSILS IN YOUNG
CHILDREN.¹**

BY JAMES DONELAN, CH.M., M.B., R.UNIV. IRL.,

President, Section of Laryngology, Royal Society of Medicine.

THE feeling of medical men against adenoid and tonsil operations, especially in young children, has often suggested medicinal and hygienic measures. The similar feeling of the children's relatives has been exploited by faddists and clever people. A certain section of the lay press is always ready to print anything that may provide a sensation regardless of the consequences to an uninstructed public, unable to form any judgment of its own and dependent on such oracles for its opinions. It is still more unfortunate that medical men distinguished in other fields of study, but obviously without the necessary technical skill and experience, should lend the support of their reputations to these fads, and do themselves injury by basing their advocacy on utterly inadequate evidence. Pathological enlargements of the pharyngeal, palatal or lingual tonsils that have passed a certain stage in size and connective-tissue proliferation cannot be made to disappear by breathing exercises, thyroid extract, nose-drill or snuffs.

The subject of snuffs is not one to be sneezed at, and would open up delightful if dusty vistas of research to a member of our Historical Section. He must not "take it in snuff" if Shakespeare yields him nothing in our sense of snuff or sneezing, but he can pass from Dioscorides to Dobell, from the sternutatories of Celsus to the "Pinch of Snuff by Dean Snift," and find none of it barren.²

When I went into this snuff business ten days ago I thought it could be easily laughed out of Court, and so it could on its merits; but it is so involved in honest misconceptions that it has to be taken more seriously than it deserves.

One had heard of it vaguely for some years as the Hancock treatment. It received, however, a special stimulus in the "big gooseberry" season of last year—a time when we are apt to lose sight of our *Lancets*.

¹ Précis of a paper read at the Summer Congress of the Laryngological Section of the Royal Society of Medicine, May 2, 1919.

² *A Pinch of Snuff by Dean Snift* is a well-known book amongst snuff-takers.

I think it fairest to make a few quotations from a "Clinical Note" by one of its advocates in the *Lancet* of August 24, entitled, "A Device for the Prevention and Treatment of Adenoids," by Isabel Ormiston, M.B., Medical Inspector of Schools, Tasmania. Though at first sceptical as to the value of the Hardcock Treatment, Dr. Ormiston was not satisfied with the results of the usual operation. The device consists "in the production of a sneeze by lightly touching the nasal septum near the tip of the nose with a slightly irritant powder made of iris root and soap."¹ One cannot help recalling Pope's lines:

"Just where the breath of life his nostrils drew
A pinch of snuff the wily virgin threw."

Though it would at first appear that one sneeze has even more effect than that celebrated in "The Rape of the Lock," we learn that a course of sneezing is necessary, supplemented by handkerchief drill on an extensive scale in various "experimental clinics." We even read of a man aged forty-two, who was relieved of his headache by being "made to sneeze" for six months, though it is naively added, apparently as conclusive evidence of cure, that having been sent home to continue the treatment "he has not since been heard from."

Out of the suggested large numbers of children subjected to this "Handcock treatment," Dr. Ormiston gives only two cases as typical specimens of its success. There is no evidence that a reliable diagnosis of adenoids had been made; still less are the results of the snuffing and sneezing and snorting ascertained by examination, but letters from the mother of one and the father of the other are quoted testifying to an improvement in general health which might have been in spite of the treatment.

It is not so long since another Australian writer set out to teach us something he had learned about the anatomy of the septum which was new to him though not to Zuckerkandl. Dr. Ormiston appears to have fallen into a similar error in regarding errhines as a new treatment for catarrh however new it may be as a cure for adenoids. The literature of the past down to Dobell and even Morell Mackenzie teems with instances of their use for catarrh; but as regards adenoids, Morell Mackenzie, with a sure instinct from the very first period in their history, advocates operation when there is evidence of obstruction to breathing or danger to hearing. Celsus gives several lists of sternutatories but he does not mention iris amongst them, although he gives it as a purgative and counter-irritant—qualities recognised in the U.S. Pharmacopœia at the present time. These would hardly recommend it for repeated application to the nasal mucous membranes. Leaving Dr. Ormiston's article for the moment I will add only that it, as well as the letters of eminent physicians, anæsthetists and others in support of it, can be recommended as instances of large deductions from slight or erroneous premisses.

In the few minutes remaining to me there is happily no need before such an audience to waste breath on breathing exercises. We all know their usefulness to be chiefly post-operative.

¹ Apparently the powdered rhizome of *Iris versicolor*, popularly known in England as "orris root," and much used in tooth-powders, and as a "baffer" to conceal the odour of alcohol. It is official in the U.S.P., and besides being an efficient cathartic is credited with a specific influence in thyroid gland enlargements. This latter action might be recommended to the consideration of the advocates of thyroid extract as a cure for adenoids.

I pass therefore to another alternative to operation. Based on the views of Hertogue and Rothschild it has been warmly advocated by Dr. Leonard Williams in this country.¹ I am indebted to his courtesy for reprints of his various communications. He is strongly in favour of the view that adenoids and enlarged tonsils are a symptom of thyroid inadequacy, and he is supported in this (with, however, an important qualifying "if") by MacCarrison in his very valuable work, "The Thyroid Gland in Health and in Disease," which appeared in 1917. Dr. Williams also recommends thyroid extract in one of the letters that appeared in the *Lancet* in support of Dr. Ormiston's crusade against operation. With all possible respect I must say that there is nothing in these writings that would lead one to think thyroid extract has more than a limited influence, if any, in causing what he calls the "disappearance" of adenoids. There is only a probability but no positive proof that any of his cases had "adenoids," or anything more than a slight or temporary hyperæmia of the pharyngeal tonsil. It is only fair to say that Dr. Williams is chiefly occupied with the connection between enuresis and hypothyroidism, and that is perhaps why in all but two cases he omits to mention the effect of the extract on the "adenoids" assumed to be present, and then, like Dr. Ormiston, he infers their "disappearance" from an improvement in the breathing.

Like so many others, I am becoming more and more convinced that the revival of the old "knife and fork" operation for enlarged tonsils, which, as improved, we know now as enucleation, is the method that will give permanent good results in most cases. For this reason I was induced by Dr. Williams' articles to try thyroid extract in order to give weakly and apparently sub-thyroid children under four years old a chance of avoiding operation until it could be undertaken in more favourable conditions. Since 1914 I have collected twenty cases of children from one and a-quarter to four and a-quarter years old in whom the presence of "adenoids" of notable size was made certain by digital examination before treatment and the result estimated after three months in the same manner. The eleven boys were part of seventeen cases in which circumcision had to be performed, and advantage was taken of the anaesthesia in six cases under two and a-half years to palpate the nasopharynx. It was only in these six cases, and in two girls of eighteen and twenty-two months respectively, in whom the diagnosis was inferential, that thyroid extract appeared to have a distinct influence in diminishing the adenoids. One of the girls and two of the boys had a marked increase of "adenoid" symptoms a year later after measles and considerable masses were subsequently removed. The other girl died of influenza last autumn. Operation has been avoided in the case of the remaining four boys for periods varying from eighteen months to two years and three months from the beginning of treatment. The dose employed varied from three-fourths of a grain to two grains daily, and the effect seemed better when it was divided into three daily doses than when given in one. In all cases the extract was supplemented by cod-liver oil and iron or maltine and iron. The children under two and a-half years old had enlargements of the pharyngeal tonsil in the form of the "soft gelatinous mass" referred to in the Children's Section as Sir Felix Semon's description of a class of case likely to be amenable to medicinal or hygienic treatment. All the other cases, *i. e.* five boys and seven girls,

¹ *Lancet*, May 1, 1909; *Brit. Journ. Child. Dis.*, June, 1909; *Polyclinic*, June, 1909, etc.

had a firmer form of hypertrophy, and in all these the influence of this treatment was at most only transitory. No diminution of anything that could be called a hypertrophied tonsil was observed. To these must be added the two boys who were operated after measles, so that of the whole twenty there were only the four boys under two years and three months in whom a distinct result in avoiding the need for operation may be claimed. On the other hand all the children were improved in general health even before it became necessary to operate.

Those who propose alternatives to operation in these cases must observe conditions that are the merest commonplaces to members of our Section. The diagnosis must be clearly established: it must not be forgotten that the normal adenoid tissues are liable to increased functional hyperæmia and swelling, and this must not be mistaken for catarrh, nor should the cure of catarrh alone by medicinal and hygienic treatment be mistaken for the disappearance of adenoids. Finally, only a digital examination can decide the claims of any treatment. The post-nasal mirror is not to be relied on in young children even in skilled hands. It does not appear to me that in the cases treated by the Hancock method these conditions have been observed.

As regards the snuff treatment itself, we know that an irritant powder that produces hyperæmia will cause hypertrophy if used repeatedly. Mr. Stuart Low in the Children's Section very properly pointed out the effects of the engorgement caused by such substances, and I hope their use will be condemned by the Section. The handkerchief drill has also its dangers. The handkerchief, especially the child's, as a cause and carrier of disease would make an interesting and valuable study. The experiments of StClair Thomson, Hewlett, Lermoyez and others have shown that the nasal mucus is the great respiratory germicide. The normal membrane puts forth only enough of this precious fluid to keep it moist and arrest impurities. Enforced and repeated nose-blowing is likely to produce chronic rhinorrhœa: and I have lately seen some out-patients in whom this symptom was attributed to "handkerchief drill," and from whom I have removed large adenoids. When the secretion has become muco-purulent or purulent it should be got rid of, but I do not think the best way is to teach rows of children to grasp their noses with their fingers in a handkerchief, and raise their arms to the level of their shoulders in order to fill the chest before expulsion. One can never be sure that the child is grasping the nose properly and that it is not forcing against an obstruction. To my mind the proper way is to seek an opportunity of doing so *more antiquo*, or, as StClair Thomson says, *à la paysanne*—that is, with a finger on one ala and the other side free. It is the natural way, though not in the accepted code of good manners, but privately and regularly practised has undoubted advantages in the later stages of catarrh and other conditions of abnormal secretion.

The whole question how far medicinal and hygienic treatment of adenoids and enlarged tonsils can take the place of operation depends on the amount of connective-tissue proliferation which we are lately learning to call fibrosis. This constitutes the disease, and no treatment, not even Margate, as Dr. William Hill said, will take the place of operation if it has passed a certain point. I agree with the remark of Dr. Irwin Moore that fibrosis may occur at almost any age, but it is far less likely to occur in children under two and a-half years old. The reason a diminution was observed in the adenoids of the four boys under this age appears to have been that there was not time for any marked fibrosis.

LATENT SINUSITIS IN RELATION TO SYSTEMIC INFECTIONS, ESPECIALLY WITH REFERENCE TO RHEUMATOID ARTHRITIS.¹

BY P. WATSON-WILLIAMS, M.D.,

Lecturer on Otolaryngology, in the University of Bristol;
and in Charge of the Department of Diseases of the Ear, Nose, and Throat,
Bristol Royal Infirmary.

Of the tonsils as a portal for systemic infection much has been written and observed during the past thirty years, but although nasal accessory sinus infections have been considered as an occasional source of systemic septic infection, the occurrence of such systemic complications has been apparently so rare as to seem accidental rather than consequential. And whether one considers nasal accessory sinusitis as a cause of aural, ophthalmic, or of systemic infection, the same outstanding facts come to the mind of almost every experienced rhinologist, viz. that well-marked chronic sinusitis with copious purulent discharge and even most cases of purulent sinusitis with polypus are infrequently associated with aural, ophthalmic or systemic infections which could be attributed to the nasal sinus disease. It might almost seem to follow that if the well-marked sinus infections are infrequent causes of such complications, the less marked and less severe sinus infections must be more innocent and certainly cannot be the more virulent.

The soundness of this line of argument obviously depends on the soundness of one's premises, and it is the latter that I challenge. I used to take gross macroscopic evidence of pus in a sinus almost as a measure of the virulence of its infection, and certainly, in the minds of some—myself included till comparatively recently—gross evidence of pus has become the criterion of an infected sinus. Yet one might as well take the presence of a swarm of special constables as the criterion of the existence of an alien enemy colony in a city, and the absence of constables as convincing evidence that alien enemies were non-existent, and argue that the fact of few police being about proved that the alien foes must be held innocent of some far-reaching mischief attributed to them by Scotland Yard. To some it might occur that the unfortunate shortness of police protection was the true explanation of the wide-spread trouble, providing, of course, there was no room for doubting the existence of the alien foes in our midst. And thus, if we can prove the existence of a septic infection although polynuclears are few and far between, we can understand that the patient is much more open to wide-spread infection than we are accustomed to find when the polynuclears are abundant and phagocytosis active.

This digression serves to substantiate my view of what constitutes a "latent" sinusitis—viz. a sinus infection which is not associated with the signs and symptoms which are usually accepted as evidence of an infective sinusitis, therefore which is "latent" in that it is hidden. I am not suggesting that any purulent nasal sinus infection may not be a source of systemic infection, but I contend that a paucity of polynuclears, *i. e.* a non-purulent nasal discharge, is more likely to be associated with, and to be the essential cause of, a systemic infection than is a sinusitis with a profuse purulent discharge—always assuming a virulent infecting organism in the affected sinus—much as a *post-mortem* wound which rapidly forms a local swelling and abscess is less likely to cause general

¹ Paper read at the Summer Congress of the Laryngological Section of the Royal Society of Medicine, May 2, 1919.

septic infection than is the infected wound which forms no local swelling but is followed by lymph-vascular infection.

How is the existence of an infective sinusitis to be determined if the discharge is not obviously purulent? In every case the suspected sinus should be explored by passing a sterilised cannula into the sinus, sucking out the contents, and submitting the contained secretions to histological film examination and to culture. A stained film will show what organisms are present, and the presence or absence of polynuclears and phagocytosis. The culture will serve to furnish further, and in some respects fuller, evidence of the dominant organisms. I attach great importance to the film examination, more particularly in cases where the discharges and the sinus contents appear to the naked eye to be devoid of pus, for the presence of polynuclears and pyogenic organisms and phagocytosis furnish conclusive evidence of an active infection. (My method of making antral and sphenoidal sinus exploration has been already frequently demonstrated and described elsewhere, and I therefore do not at present allude further to the technique of this or other methods.)

If, with relatively clear, non-purulent discharge from an actively infected sinus, the systemic infection is prone to be more marked, it follows that contrariwise the most copiously purulent discharge is prone to be local rather than systemic and wide-spread in its toxic effects, and this in chronic cases I have often found to hold good. Certain it is that very thick, opaque, white or whitish-yellow "pus" extracted from a long-standing antral sinusitis has many times proved to be either sterile on culture or only showing slight growth of G.P. staphylococci, consisting of broken-down cells or altered mucus rather than pus; and this latter group of very purulent chronic sinusitis cases are usually well preserved, bright and active, suffering essentially from local discomfort or inconvenience from the discharge, or from secondary effects due to mechanical interference with the drainage of the sinuses, from œdematous swelling of the mucosa or polypus, etc., whereas the other group of chronic non-purulent sinusitis cases are usually depressed, neurasthenic, inactive, anæmic, and in indifferent health generally.

Of this latter group I desire to draw attention to the cases of rheumatism and rheumatoid or "osteo-arthritis" due to sinusitis, not because systemic infection due to chronic latent sinus infection involves joints specially, but for the reason that it is impracticable in a short communication to cover the whole range of cases coming into this group.

Notes of two cases of chronic rheumatoid arthritis are submitted. Each case had undergone several courses of treatment for the joint affection, and with only temporary relief. In both there was proved infective sinusitis, and in each case the opening and drainage of the infected sinuses was followed by very striking and almost immediate favourable results in the joint affection. And in both cases both maxillary antra were proved sterile, while the source of infection was the sphenoidal sinuses. Only in one (the first case) was there a distinctly purulent sinus content, and that pus was sterile; it was the almost clear, very slightly turbid washings that proved on culture to be definitely infective.

CASE 1.—RHEUMATOID ARTHRITIS WITH CHRONIC CATARRHAL DEAFNESS.

W. B.—, male, aged fifty-four, referred to me by Capt. Duckett, R.A.M.C., at Bath, on account of deafness. The deafness was due to chronic adhesive otitis;

both tympanic drums were retracted, and the malleus in both ears almost fixed; Eustachian tubes patent, catheterisation improved the hearing. Nothing abnormal was observed by anterior rhinoscopy, and by endo-rhinoscopy only a few strings of sticky secretion from the posterior ends of the inferior turbinals. But I was struck with his depressed condition and inability to concentrate his mind, which he attributed to his deafness. Further, I found he had a typical well-marked rheumatoid swelling of the left wrist and finger-joints, and the same in less degree was true of the right wrist and hand, the skin giving the soft silky sensation that I think is not unusual in rheumatoid arthritis. He had first noticed the left wrist was becoming stiff and swollen three years previously, and later the right wrist, right ankle, and both knee-joints were involved. Two years ago had been to Buxton for a course of treatment, and one year later had a course of baths and massage at Bath with benefit.

January 15, 1919: Exploration of the sinuses and injection of colloidal argéntum into each. Maxillary antra: Right—yielded a little turbid secretion. Left—copious thick purulent discharge, apparently almost pure pus. Sphenoidal sinuses: Right—some opalescent muco-purulent turbidity. Left—clear.

Reports of Cultures, etc., by Prof. Walker Hall, from the Sinus Fluids.—Maxillary antra: Right—film: small amount of mucus, occasional polynuclear cell, no cocci; culture sterile. Left (the copious thick pus)—film: heavy deposit of degenerated pus; no mucus, no organisms; culture, no growth. Sphenoidal sinuses: Right—film: considerable amount of mucus, a few polynuclears, no cocci; culture, heavy growth of *Staphylococcus albus*. Left—film: few flat cells; no polynuclears, no cocci; culture, sterile.

I would invite particular attention to the fact (1) that the left antral discharge of apparently almost pure pus was sterile to culture, and that the discharge was essentially degenerated pus; (2) that with a seemingly innocent turbidity of the right sphenoidal sinus washing, with only a few polynuclears, the culture yielded a heavy growth of *Staphylococcus albus*. Undoubtedly those who take pus as the criterion of infection would have opened and drained the left antrum while leaving the right sphenoidal sinus untouched. This case shows the value of cultures being made when there is little pus to be obtained from a suspected sinus.

A fortnight later he returned for Eustachian catheterisation, but was pleased to find that all his joints were better and the left wrist obviously less swollen and less stiff.

In this case the left antrum, the left frontal sinus and both sphenoidal sinuses were subsequently freely opened and drained. He improved in general health and lost his depression, while his power of concentration had greatly improved. But the joint swellings and stiffness were very much better, and within a month all the old pains had gone. He found he could carry weights in his hand that for many months would have caused too much pain.

CASE 2.—RHEUMATOID ARTHRITIS WITH APPENDICITIS, ETC.

Miss B. D.—, aged forty-six. Case of rheumatoid arthritis, referred to me by Dr. Lemarchand, of Barnstaple, for post-nasal catarrh with clear or slightly muco-purulent discharge.

Nasal History.—Between 1884 and 1886 she was under Dr. Woukes, and she says he cauterised the nasal mucosa with some "caustic," as it was said to be velvety. Subsequently she consulted three very distinguished rhinologists still with us, and there was apparently little evidence of sinusitis then, since no operation was advised beyond the removal of tonsils.

Rheumatic History.—About the age of fourteen she began to have rheumatism in her left knee, and about a year later the right knee was involved as well as the left. Since then has always been more or less stiff and rheumatic. About the age of thirty-one the left wrist and finger-joints became swollen and rheumatic, and have never recovered. Shortly afterwards she had neuritis in the region of the left shoulder. During the ten years previous to my seeing her she had also developed rheumatic pains and stiffness in both ankles and wrists, and she had undergone five courses of baths at Bath in different years, and for three years had courses of baths at Vittel. In 1911 she saw Dr. Lewis Jones for her sciatica, etc., and he suggested there must be some source of poisoning causing the rheumatism.

Appendicitis.—In 1906 she underwent operation of appendicectomy by Mr. Lockwood. She was making excellent recovery till, on the ninth day, she developed pleurisy followed by pneumonia.

Nasal Examination.—Anterior rhinoscopy revealed nothing of importance

beyond slight diffuse turgescence of the mucosa; no discharge seen. Endorhinotomy showed a few strings of clear discharge and streaks of muco-pus in the right and left olfactory fissures. A good deal of tenacious opalescent mucous discharge came post-nasally, and formed a film on the granular posterior pharyngeal wall.

Exploration of Sinuses.—The absence of any definitely purulent discharge led me to withhold a diagnosis of any sinus infection until the maxillary antra and sphenoidal sinuses had been explored under cocaine anesthesia. With my suction syringes, throwing in distilled water and sucking back the contents of the sinuses, I obtained clear returns from the right and left antrum and apparently almost clear returns from the right and left sphenoidal sinus. A sterile swab was also taken from the naso-pharynx. Some collosol argentum was finally thrown into each of the sinuses. Culture and film preparations from the washings made by Prof. Walker Hall:

From the Maxillary Antra.—Film showed no cells, no cocci, and on culture both were sterile.

From the Sphenoidal Sinuses.—Right—Film: Few polynuclears, no phagocytosis. Culture: G.P. *Staphylococcus aureus* and G.P. *Streptococcus brevis*. Left—Film: Polynuclears and flattened cells, no sign of phagocytosis. Culture: G.P. *Staphylococcus aureus*.

Naso-pharyngeal Swab.—Film: Mucus and polynuclears, phagocytosis of cocci. Culture: Pneumococci and *Staphylococcus aureus*.

She felt better the next day or two, and thirteen days later—on October 24, 1916—declared she felt quite well, and that her joints were certainly less stiff, and that she had lost her eye headaches. For the next day or two the sphenoidal sinuses were mopped with disinfectant. She continued to feel so very well that she refused to have any further or more radical treatment, though I feared the symptoms would return after a month or two.

January, 1917: The pains and stiffness at the back of the neck, in the knees and left shoulder, had returned. Endoscopy showed a distinct streak of muco-pus coming from the left sphenoidal sinus.

January 19, 1917: Operation; both sphenoidal sinuses freely opened under general anesthesia.

February 7: After daily lavage of the sphenoidal sinuses all rheumatic pains gone, but the most striking objective feature was the marked diminution of the chronic rheumatoid arthritic swelling of the left wrist and the absence of pain.

Dr. Lemarchand writes on April 26, 1919, *i.e.* two years and three months after the operation: "Since the operation all the rheumatic pains have gone; she has been free of colds and sore throats, and her general health has been all that could be desired. Undoubtedly the nasal infection was the cause of all her troubles, and the operative measures and subsequent washing out of the sinuses cured it. The cure, moreover, is maintained."

Interpretation of History.—In early childhood she probably developed a mild nasal sinus infection which remained "latent" and non-purulent. From systemic infection she began to develop "rheumatism," and later developed chronic rheumatoid arthritis. The nasal mucosa became thickened and velvety from the sinus infection in 1884, when she was aged fourteen. Later the tonsils hypertrophied in response to the infection, became septic, and called for removal. After repeated attacks of gastric catarrh from swallowing the organisms, the deficiency in hydrochloric acid allowed constant intestinal infection till the appendix became infected. At the age of thirty-six the appendix was removed, and all went well till a bronchial infection caused a septic pneumonia, nine days after the operation. Subsequently the removal of a definite and proved sphenoidal sinus infection was followed by marked improvement in general health, and by a remarkable improvement in the rheumatoid arthritis.

GENERAL REMARKS.

Two cases prove nothing, but afford examples which, taken in conjunction with others, has led me to the following conclusions:

(1) That a latent sinus infection may persist for a great many years. When one remembers that an infected sinus is an ideal physiological culture tube, provided polynuclears are inactive, the varying virulence of the infecting organisms correspond with the variations in the symptoms due to systemic infection.

(2) That chronic rheumatoid arthritis and other infective rheumatic symptoms may be due to a sinus infection.

(3) That appendicitis may be due to infection through the gastrointestinal tract from a nasal sinusitis. A large percentage of chronic sinus cases have suffered from appendicitis, but though I believe a nasal sinusitis is not rarely the source of the appendicular infection, I do not suggest that this is the usual source.

(4) That a very copious or thick purulent discharge may be sterile, whereas a thin, opalescent or almost colourless discharge may yield a free growth of pyogenic organisms on culture.

(5) The previous history of nasal sinusitis cases is worthy of careful notes.

I suggest that some cases of systemic septic infection attributed to tonsillar infection may be due to a nasal sinusitis, which has caused the tonsillar infection with hypertrophy of the tonsillar lymph-tissue structures.

THE AQUEDUCT OF FALLOPIUS AND FACIAL PARALYSIS.

By DAN MCKENZIE, M.D.

PART I: THE AQUEDUCT OF FALLOPIUS.

For the opportunity of carrying out this anatomical study of the aqueduct of Fallopius I am indebted to Mr. A. L. Whitehead, of Leeds, who, on giving up the practice of otology for that of ophthalmology, generously presented me with his collection of 250 temporal bones.

The importance to the operating otologist of an accurate knowledge of the normal course and the variations of the facial nerve led me to direct my attention to this item in the anatomy before any other.

Anyone who proceeds to examine temporal bones in the manner adopted by the writer must recognise his indebtedness to the monumental labours of Mr. Arthur Cheate in work which has become classical, and it is with great pleasure that I express my thanks to him for many important hints and communications on the subject.

In making the investigation fifty bones of both sexes and of all ages from birth up to sixty-eight years were sectioned, and the relationship of the Fallopiian canal to the other structures in the temporal bone throughout its entire course was noted, measurements of distances being made in millimetres.

For this purpose the canal was divided up into the following five sections:

(1) From the internal auditory meatus to the lamina cribrosa. (Although, strictly speaking, not a segment of the Fallopiian aqueduct proper, the distance between these points was measured in order to obtain the total length of the facial nerve in the temporal bone.)

(2) From the lamina cribrosa to the genu (or geniculate angle).

The above comprise the *petrous segment*.

(3) From the genu to the commencement of the "bend" at the pyramid.

(4) From the commencement of the "bend" to its passage into the vertical section—the "pyramidal" section.

These two comprise the *tympanic segment*.

(5) The vertical section from the end of the "bend" to the stylomastoid foramen, comprising the *mastoid segment*.

The following facts were noted and recorded with regard to each:

In the Petrous Segment.

(a) The length in millimetres from the internal auditory meatus to the lamina cribrosa.

(b) The length in millimetres from the lamina cribrosa to the genu. (Intralabyrinthine section.)

(c) The relationship to the cochlea and vestibule of the last.

(d) The angle made by the axes of the internal auditory meatus and the Fallopian canal.

In the Tympanic Segment.

(a) The presence or absence of dehiscences in the wall of the canal.

(b) The length from the genu to the bend.

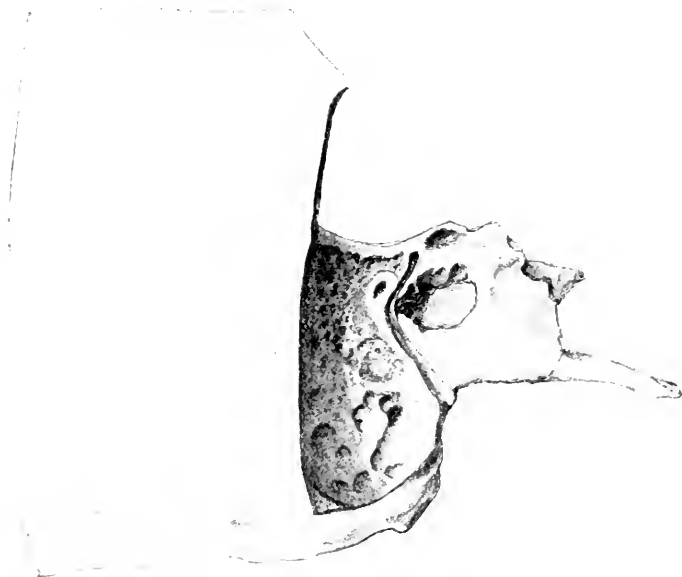


FIG. 1.—The tympanic and vertical segments of the aqueductus Fallopian in a cellular temporal bone, showing the relationship of the canal to the tympanic membrane, to the external semicircular canal, which has been cut through in making the section, and to the mastoid cells. (Bone 48, right temporal, aged eighteen, female, slightly enlarged.)

(c) The inclination of the canal in the tympanum relative to (a) the horizontal and (3) the sagittal plane.

(d) The approximate extent in millimetres of the outward deviation or trend of the canal in the tympanum (a) relative to the tympanic inner wall, (3) relative to the sagittal plane.

(e) The distance from the genu to the anterior border of the fenestra ovalis.

(f) The distance from the upper border of the fenestra ovalis to the Fallopian canal.

(g) The distance from the posterior border of the fenestra ovalis to the commencement of the pyramidal section—the "bend."

(h) The distance from the Fallopian canal to the external semicircular canal.

In addition, the following associated relationships were, as a rule, also observed and noted:

(i) The distance between the promontory and the prominence of the external

semicircular canal across the oval window and the Fallopian canal—a measurement of importance in performing the “bridge” operation on the labyrinth.

(j) The extent in millimetres of the overhang of the prominence of the external semicircular canal over the Fallopian aqueduct.

The pyramidal section, the “bend,” that part of the canal which lies medial to the pyramid, where the tympanic segment passes into the vertical segment.

(i) Its length in millimetres.

(ii) The distance between the “bend” and the nearest point in the antrum or aditus.

(iii) Its relation to the sinus tympani.

The Vertical or Mastoid Segment.

(a) Length in millimetres.

(b) Distance from and relation to the tympanum, the membrana tympani, and the posterior wall of the external auditory meatus.

(c) Relation to mastoid cells when present.

(d) The angle made with (α) the horizontal plane; (β) the sagittal plane.

The following facts were noted with regard to the stylomastoid foramen:

(i) The distances in millimetres between the foramen and the tip of the mastoid process, anterior, medial, and superior.

(ii) The distance from the groove of the lateral sinus, and—

(iii) From the jugular foramen, including the relationship of the vertical segment, the stylomastoid foramen and the jugular foramen—a point of importance in operations on the jugular bulb.

(iv) The line of descent of the vertical portion of the canal was projected and marked upon the surface of the bone; the length and position of this projected line were noted and also the angle it made with the long axis of the external meatus.

(v) The depth of the canal from the outer surface of the bone was noted (α) at the bend, (β) at the upper end of the vertical, (γ) at the stylomastoid foramen.

In all specimens also the mastoid process was measured from the digastric groove to the tip, as was the distance between the lateral sinus groove and the posterior meatal wall.

Finally, the nature of the mastoid process was noted—whether, that is to say, it was cellular or diploetic in the acceptation adopted by Mr. A. Cheatle in his work on the temporal bone.

It should be noted that the order in which the foregoing arrangements are placed does not correspond to that followed when the bone is sectioned. In making the examination several measurements and observations must be made before beginning to cut the bone.

The cutting of the bones was effected by means of a fine fret-saw, the specimen being held in a gunmaker's vice, the grip of which is at once firm and gentle. Sections were made in many directions and with the object of displaying different portions of the canal in different specimens. That being so, although efforts were made to obtain all the foregoing observations in every bone, it was, of course, impossible always to do so. Thus one set of data is but seldom obtained from the whole series of bones. As will be seen by a reference to the tables, each item varies in the number of bones it represents from fifty to eighteen.

In order to illustrate the specimens, lead-pencil drawings were made under the guidance of the camera lucida, this method being chosen in preference to photography as displaying the salient features of the specimen more justly.

Lastly, it was found possible, in several intact specimens, to thread the canal with a fine metal wire from the internal auditory meatus to the stylo-mastoid foramen. And I am indebted to Dr. Robert Knox for a series of beautiful stereoscopic radiograms of those wired specimens. For the trouble he has taken I desire to express to him my most grateful thanks.

The blocks reproducing the pencil drawings I owe to the kindness of Mr. Halton, of *The Studio*.

After all the specimens had been examined, the data were collocated and tabulated according to the decades of life, in order that the changes

from infancy to old age might be conveniently displayed. The numbers of the specimens in each decade were as follows :

First decade	10	bones.
Second	5	..
Third	10	..
Fourth	8	..
Fifth	7	..
Sixth	7	..
Seventh	3	..

In these the "infantile" or diploëtic type of mastoid was found as follows :

In the first decade	2
In the second decade	0
In the third decade	4
In the fourth decade	5
In the fifth decade	2
In the sixth decade	4
In the seventh decade	0

That is, 17 in all—equal to 34 per cent.

In giving the measurements in figures, the highest and the lowest are given, and then the average.

As the relationship of the various sections of the Fallopiian canal in infancy and childhood is most easily apprehended after one has become familiar with adult conditions, we shall throughout discuss the latter first.

The first impression one receives in examining the aqueduct of Fallopius is that it presents very little variation in different specimens. But this impression is not borne out by the measurements. Thus, to take one of the simplest facts, the length of the tympanic segment to wit, we find it ranging from 4 mm. to as much as 11 mm., which of course represents a variation of nearly 200 per cent. The fact is that the parts here are so minute that one or two millimetres may represent quite a large relative variation.

In the following description I propose to follow the course of the canal as an operating surgeon would from without inwards.

The Vertical (Mastoid) Segment.—*The Line of Descent* of the vertical (mastoid) portion of the canal was examined in 40 adult bones (see Figs. 2 and 30). It may be stated as follows: From a point 1 mm. above the lowest angle of Macewen's triangle downwards and slightly forwards at an angle of 100° along the line of the junction of the posterior wall of the bony external auditory meatus to a point 4 mm. above the lower lip of the bony meatus.

(*Note.*—The variations in this line are about 1 mm. up and down and 2 mm. front and back.)

The projected line of descent when extended meets the line of the long axis of the external meatus at a small angle (about 20°) (Fig. 1), but in one or two specimens these lines were parallel.

The projected line represents the vertical segment of the canal as high as the bend at the pyramid (see also Figs. 3, 4 and 7).

It is to be noted that the line has a slight inclination forward in most of the specimens. As this fact is of importance to the operator I give the actual measurements obtained in estimating the angle the line makes with the horizon (in 38 bones above the first decade of life). Highest, 118° downward and forward; lowest, 90° ; average,



FIG. 2 (compare also Fig. 29).—A. Projected line of descent of vertical segment in adult bone (aged twenty) extended to meet B. line indicating long axis of external auditory meatus. (Left temporal, bone 28, male.)



FIG. 3.—Vertical segment from front. A. Mastoid antrum. B. Membrana tympani. C. Fallopian aqueduct opened up in petrous. D. Tip of mastoid process. ($\times \frac{1}{4}$. Bone 19, right temporal, aged twenty-eight, female.)

100.5°; that is to say, in no adult bone did the line show any backward inclination.

In like manner the angle made by the vertical with the sagittal, or on looking from the front backwards, was observed in order to estimate whether or not there was any outward inclination of the mastoid segment from above down. As a matter of fact the making of this observation in a separate temporal bone is open to fallacy as it is difficult to obtain the erect pose. In 35 adult bones the measurements made were as follows: Highest, 115° downward and outward; lowest,



FIG. 4.—Vertical segment from an antero-external position. A. Short process of incus in aditus. B. Membrana tympani. C. Tip of mastoid process. (Bone 19, right temporal, female, aged twenty-eight.)

80° downward and inward. The majority of bones showed a gentle outward inclination measuring about 94° (see Figs. 2, 3, 33, 34 and 35). In infancy, after the vertical is formed (at the age of three years) the measurements were almost the same as in the adult specimens, namely: Highest, 105° downward and outward; lowest, 80° downward and inward; average, 93° downward and outward.

In this connection other observers have recorded the presence of a "shoulder" or outward bulge affecting the upper part of the vertical segment. In one of my specimens I noted something of the kind to the extent of 2 mm.

The observation reads as follows (Bone 15, right temporal, female, aged eighteen months): "The canal in the bend presents a 'shoulder' jutting outwards just below the overhang of the external semicircular canal in the aditus.

This outward projection measures 2 mm. Its length involves the total length of the pyramidal bend—*i. e.* 4 mm. Thereafter it inclines inward again to the vertical position, which is relatively short."

In another specimen a similar curve or bulge in a backward direction was noticed. In two or three specimens in the Cheatle collection a similar appearance is noted, and in a recent specimen kindly shown to me by Mr. G. J. Jenkins the vertical segment showed a gentle curve backwards affecting the whole length of the vertical segment.

G F E D



FIG. 5.—Mastoid, external auditory meatus, tympanum, and aditus from the front. Fallopian aqueduct has been opened in its tympanic segment. A. Mastoid process. B. Osseous meatus. C. Antrum, opened behind. D. Aditus. E. Tympanic segment of Fallopian aqueduct opened. Note its disappearance behind the pyramid. F. Oval window. G. Section leading to Fallopian aqueduct in the petrous. ($\times \frac{1}{3}$. Bone 30, adult male.)

But such findings are exceptional, and in the great majority of cases from the bend of the canal at the pyramid close under the aditus ad antrum the canal runs almost vertically downwards to the stylo-mastoid foramen. Thus in performing the radical mastoid operation the removal of the osseous posterior meatus, up as far as the pyramid, is quite a safe procedure in so far as the facial nerve is concerned (see Figs. 4, 5 and 7).

This may be expressed also with regard to the relationship of the vertical segment to the membrana tympani. From the bend to the foramen of exit the vertical occupies, generally speaking, the same

plane as the most medial (internal) part of the obliquely posed and conically-shaped membrana tympani (see Fig. 9). Indeed, in some specimens the canal occupied a plane entirely medial to the situation of the membrana tympani. And in none was the canal situated wholly lateral (external) to the planes of the membrane.

In this situation the Fallopian canal lies about 3 mm. posterior to the posterior meatal wall and membrana tympani (see Figs. 3, 4, 6 and 9). (Highest, 5 mm.; lowest, 2 mm.; average, 3.3 mm.)

Many years ago, in 1903, Schwartze reported that he had observed the vertical segment taking a somewhat "oblique" or "flat" course downwards and outwards, so as to bring the nerve further out than the lower margin of the tympanic ring. I have not met with this arrangement.

His preparations also show, he reported, the distance between the posterior meatal wall and the facial nerve to vary from 1 cm. to "direct proximity." The



FIG. 6.—Fallopian canal laid open from external auditory meatus, looking backwards. (The pose is oblique.) A. Mastoid process. B. Vertical segment of Fallopian canal. C. Tympanic segment of same. D. Antrum, opened behind. E. Section in petrous leading to Fallopian aqueduct. (Bone 32, left temporal, male, aged twenty-one.)

nerve also, he states, may lie so close "to the mastoid" as to be wounded by the first blow of the chisel. I have not met with this in adult specimens.

The upper end of the vertical segment is separated from the floor of the aditus by very solid bone, the thickness of which was noted as follows: Highest, 6 mm.; lowest, 2 mm.; average, 3.5 mm. (see Figs. 3, 7, 8, 9 and 16). In the infantile bone, before the age of ten years, it is interesting (and comforting to the operator) to note that these measurements were practically the same: Highest, 4 mm.; lowest, 2 mm.; average, 3.2 mm.

Relation of the Vertical Segment to Mastoid Cells.—As has already been noted, in 17 of the specimens the type was infantile and "dense" or "diploëtic," that is to say, mastoid cells were absent or were small and separated from the outer cortex of the bone, and also from the vertical segment of the Fallopian canal by solid bone. In bones with highly cellular mastoids the cells in most instances did not

approach the Fallopian canal any nearer than 2 mm., and in many the nearest cell lay as far as 5 mm. from the facial canal (see Figs. 2, 3, 15). In 10 specimens, on the other hand, cells were noted as "adjacent," *i. e.*, they lay close to the canal, being separated from it only by a thin shell of bone. Indeed, in some cases the cells seemed actually to open into the canal (see Figs. 11, 12, 13.) Such specimens



FIG. 7.—Right temporal bone from front; sectioned through meatus; a pin is inserted into the stylomastoid foramen. To its left is the mastoid process, to the right the jugular foramen. A. Leads to the mastoid antrum, below which is seen the curved line of the tympanic segment of the Fallopian canal. B. Marks the genu. The petrous, which has been sectioned, shows the cochlear spirals and the internal auditory meatus. (Right temporal, bone 26, male, aged forty-two, $\times 4$.)

show the ease with which the facial nerve might be injured by mastoid suppuration or by too vigorous operative curetting of mastoid cells in an anterior direction.

An unusual appearance is illustrated in Figs. 14 and 15. The

mastoid process was acellular. But from the pyramid a small cluster of cells which may be named "pyramidal" cells passes outwards and backwards, closely investing the bend and upper part of the vertical segment of the Fallopian canal. Mr. Arthur Cheate also draws attention to this group of cells (which occur in eight of the specimens in his collection) under the name of "petrous" cells. Conditions such as these necessarily expose the facial nerve to the influence of even mild inflammations and catarrhs of the middle ear. This "pyramidal"



FIG. 8.—Same specimen as Figs. 3 and 4 viewed from the outside. The mastoid has been divided almost vertically down in the projected line as far as the Fallopian canal. A. Membrana tympani. B. Short process of incus on floor of aditus. Below this is the "bridge," which is removed in the radical mastoid operation. Note its distance from the upper end of the vertical segment of the Fallopian canal.

cluster did not connect with the mastoid antrum. The appearance was noted in one specimen only.

The relationship of the vertical to the posterior meatal wall has already been given as it appears from an indiscriminate consideration of all the data at our disposal, but it also occurred to me that it might be interesting to compare this relationship in acellular mastoids with the same in cellular mastoids, in order to see whether the cellular development exercised any influence upon the proximity of the Fallopian aqueduct to the external auditory meatus.



FIG. 9.—Vertical segment opened up to show its relationship to membrana tympani and tympanum. Mastoid cells small and scanty. A. Stylo-mastoid foramen. B. Portion of membrana tympani with malleus. C. Tympanic segment of Fallopian canal opened up; note oval window, promontory, and niche of round window below the aqueduct, and the prominence of the external semicircular canal above it. D. The mastoid antrum. E. Upper end of the vertical passing in medial to the pyramid. F. Carotid canal. (Bone 35, right temporal, male, aged thirty-two, obliquely posed, slightly +.)



FIG. 10.—Upper end of a curved vertical (A) showing its relationship to the tympanic membrane (B), to which the handle of the malleus is still attached. C. Prominence of external semicircular canal, below which the oval window is visible. (Right temporal, bone 36, male, aged nine, pose rotated slightly.)
(To be continued.)

SOCIETIES' PROCEEDINGS.

ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

December 7, 1917.

President: DR. A. BROWN KELLY.

ABRIDGED REPORT.

Photographs, Specimen and Slide from Case of Teratoid Growth or Hairy Polypus of the Nasopharynx.¹—A. Brown Kelly.

Collection of Dental Cysts and Cysts of Floor of the Nose.—A. Brown Kelly.—The points to which it is desired to direct attention are:

(1) *The Confusion of Dental Cysts with Supposed Diseases of the Antrum.*—Within the last few years it has come to be recognised that the conditions described as "hydrops antri Highmori," "distension of the maxillary sinus by fluids or mucous cysts," "empyema of the antrum with blocking of the ostium and bulging of the walls," do not exist as such, but are really produced by dental cysts invading the antrum. As a result of our more exact knowledge dental cysts are now diagnosed much oftener than formerly. I have met with over thirty cases during the past eleven years; previously, with few exceptions, such cases were regarded by me as varieties of antral disease, or as due to periostitis of the superior maxilla.

(2) *The Differentiation of Cysts of the Floor of the Nose from Dental Cysts.*—It has been shown² that retention cysts occasionally develop in the anterior part of the floor of the nose, presumably from long ducts present in this situation. Various stages in the development of these cysts have been observed, from a small, delicate, rounded bulging of the mucous membrane just beyond the vestibule, to a sac as large as a cherry, with dense walls, causing elevation of the ala and extensive erosion of the bony edge bounding the nasal cavity below. As these cysts have been proved to have no genetic connection with the teeth it has been claimed that they should be placed in a special class. These conclusions are based on three cases I previously reported and seven I subsequently observed. Dental cysts may extend upwards, raise the ala, and also produce a bulging of the nasal floor. Some writers, apparently unaware of the existence of cysts of the floor of the nose, have described this cushion as a useful diagnostic sign of a dental cyst. The reports of several of their cases indicate, however, that they were dealing with cysts which had really originated in the nasal floor.

(3) *Treatment.*—Most of the dental cysts were removed by dissection: the smaller were scraped out, and in a few cases only a portion of the wall was excised, the remainder afterwards shrivelling and the cavity becoming obliterated. Cysts of the floor of the nose when small were punctured in the nose and cauterised. The larger were dissected out from the mouth.

¹ Fully reported in JOURN. OF LARYNGOL., RHINOL., AND OTOL., 1918, xxxiii, p. 65 (with photograph).

² JOURN. OF LARYNGOL., RHINOL., AND OTOL., 1898, xiii, p. 272.

Retention Cyst of the Nasal Floor.—**Irwin Moore.**—Patient, a male, aged fifty-three, first seen on September 12, 1916, complained of a swelling on the right side of the nose and adjoining portion of the cheek, which had existed for six months.

On examination: A round, tense, fluctuating swelling, the size of a small walnut, was seen occupying the floor of the right nasal vestibule, causing considerable obstruction, and gaping of the nasal orifice. There was marked bulging outwards of the right ala nasi with partial obliteration of the naso-labial sulcus, and protrusion forwards of the upper lip, whilst the swelling extended downwards to the right of the middle line under the lip, causing obliteration of the gingivo-labial furrow. Considerable facial disfigurement resulted, as may be seen from the photograph exhibited. Many septic stumps were present. The case was to have been shown at the meeting on November 3, 1916, and it was my intention to remove the cyst sublabially. In the meantime the patient attended the Dental Department of Charing Cross Hospital to have some teeth extracted, where the cyst was incised sublabially by the dental surgeon, and emptied of its contents, which consisted of a thick, pale yellow exudation. As a result of drainage and packing with gauze wicks the wound gradually healed up, and the cyst has not again refilled.

Short preliminary notes of the case were published in the *JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY*, vol. xxxii, p. 103.

MR. HERBERT TILLEY: I have found that most of these cysts are connected with a carious incisor tooth, either central or lateral, and that their contents include cholesterol crystals. I would ask the President whether he has found such crystals in the retention cysts. With regard to operation, I have followed a procedure similar to the President's. The large cysts sometimes extend back, like the finger of a glove, and raise the floor of the nasal fossa, and I prefer to approach them from underneath the lip, to scrape out the mucous membrane lining of the cyst, and then, pressing down the whole cyst-wall from within the nose, one gets a very quick and excellent result. An advantage of that method is the avoidance of prolonged suppuration within the nasal cavity.

DR. D. R. PATERSON: There are difficulties with some cysts even after dissecting out the sac. We have had to remove a considerable quantity of bone in such cases, and it has been suggested to me that the use of decalcified bone tissue, grafted, would help. Have members had experience of it in these cases? In two cases, when dealing with a very large cyst which encroached on the antrum, so that there was very little antrum left, instead of removing the whole cyst-wall I threw the cavity into the nose, just as is done in the radical antrum operation, and both the cases did well. These cases sometimes require considerable attention, and do not always heal up as smoothly as has been said.

THE PRESIDENT (in reply): I am not sure that I have found cholesterol crystals in retention cysts, but those I have termed retention cysts have no connection with the teeth. In reference to Dr. Paterson's remark, the cyst does not require to be dissected out, but if well opened it will shrivel up, and need very little further attention.

Pharyngeal Pouch treated by Diverticulopexy.—**William Hill.**—Man, aged forty-three, complained of suffering from dysphagia, regurgitation of food, and gurgling for six months. The diagnosis was confirmed by endoscopic and X-ray examinations. The pouch, which was bound to the gullet by fascia, was dissected free, and the fundus of

the unopened pouch stitched to the left side of the inferior constrictor muscle. As the result all symptoms have for the time disappeared.

MR. E. D. D. DAVIS: Was the diverticulum or sac firmly attached by fibrous tissue to the pharynx and was dissection difficult? Mosher has published a paper in which he records three successful cases in which he divided the party wall between the sac and the pharynx as far as the fundus of the sac by the use of the endoscope. After the first case he feared mediastinitis, but it did not occur. If the diverticulum is not adherent to the pharynx Mosher's treatment may result in mediastinitis. Perhaps the relief of the symptoms is due to having divided the lower horizontal band of fibres of the inferior constrictor muscle. These diverticula are really herniæ between the oblique and horizontal sets of fibres of the inferior constrictor and consist of mucous membrane only, and this has been shown by the sections of the diverticula cut by Prof. Keith and myself. The pathology of these diverticula is similar to that of inguinal hernia, viz. there is increased pressure due in this instance to the act of swallowing, and secondly to a weakness in the wall of the pharynx where the pouch protrudes. I think that the increased pressure can be augmented by the sphincter action of the lower fibres of the inferior constrictor, though, if one examines these cases during operation, no stenosis is found below the sac. Mr. Waggett and I recorded a case five years ago in which the sac was free and there was no difficulty in separating it from the wall of the pharynx and turning it upwards. Mr. Waggett inverted the sac into the pharynx and stitched up the slit-like opening left on the outer aspect. In Mr. Waggett's case the patient sneezed violently eight months after operation and out came the pouch with recurrence of the symptoms, and at the second operation the pouch was found in the same position as before. With regard to excision of the diverticulum, I know of two cases of recurrence in which the sac was excised and the aperture in the pharynx carefully stitched with two layers of sutures; one recurred five years after operation by Mr. Charters Symonds, and in Mr. Waggett's case the symptoms commenced to recur two years after operation. I should like to know if members have heard of recurrence after excision of the sac.

DR. DUNDAS GRANT: One case of mine died, the other recovered, and we have not heard of any recurrence. But there was no close adhesion between the sac and the œsophagus, and in neither case could Mosher's operation have been practised with any likelihood of success. In the first case the sac on the right side was stretched a long way down, and when released from its attachment it shrank up to the size of a finger-stall. To prevent recurrence, I think it important to continue dilating the upper orifice of the œsophagus: I am sure the contraction there has to do with the formation of the sac. I described a case in which all symptoms of pharyngeal pouch were present when there was no pouch, though there was pouching. The symptoms disappeared after dilatation of the upper orifice of the œsophagus. It might have been well to obliterate the neck of the pouch, because if left open for drainage the chance of food getting into it is great. Goldman's operation was accompanied by a ligature and twisting up of the pharyngeal pouch before bringing it to the surface. Its tail was stitched into the wound ready to be pulled out when loose at the site of the ligature.

DR. KELSON: In two cases of complete removal of pouch I have had there was no recurrence in one for two years, and in the other for three years, after which the patients disappeared. Both were between sixty

and seventy years of age. The extraordinary way in which these patients improve in health and put on flesh afterwards fully justifies the operation.

Mr. E. D. D. DAVIS: Halsted informs me that he had one case in which he ligatured the sac near the wall of the pharynx and allowed it to lie in the neck wound, which was packed with gauze, but the patient died of pneumonia a few days later.

The PRESIDENT: Dr. Hill has introduced an important modification in the treatment of pharyngeal pouches. I have had a few cases of the kind, but most of them have been in very old persons in whom surgical interference was inadmissible, while for the others I have hesitated to urge operation owing to the mortality. Has Dr. Hill found the pouch arising, as usual, above the fundiform fibres of the inferior constrictor, or in the weak triangular space bounded above by these fibres and laterally by the converging bundles of longitudinal fibres of the œsophagus?

Dr. HILL (in reply): In the two cases which have been operated upon the pouch was between the horizontal and the oblique fibres of the inferior constrictor: that is to say, the neck of the sac was surrounded by the inferior constrictor, and I assumed it was the position, because both Killian and Keith worked it out at that site. Zenker was the first to demonstrate that they perforated the constrictor muscle, though he pointed out that Rokitsansky had found *post-mortem*, in one case, that it did come through the substance of the inferior constrictor. Zenker visited the museums of Europe, and got permission to dissect and examine specimens. He found they were all pharyngeal, not œsophageal. Mr. Davis has shown the untenability of Hackermann's linear triangle myth: there is no weakening of the upper part of the gullet itself. I have looked for it in all the cases I have seen, but there was a hiatus between the two constrictor bundles of muscles in both operations. Dr. Grant asked why I did not obliterate the neck. This is what Halsted did, and, as Mr. Davis said, he had a death. It is quite likely that that patient died from the sloughing at the ligatured site, and the supervention of coli infection, mediastinitis and pneumonia. As to whether the pouch was bound down by fascia, it was so in both cases, and careful dissection was necessary, and I was glad to have a bougie in the pouch, so that I could dissect the fascia between the gullet and the pouch. I have read of many cases, and in some they separate easily: I mean the large ones, in which one tears the fascia readily when it is put on the stretch. But in these two cases there had been much binding down, and I felt nervous about the recurrent laryngeal nerve. I should never think of doing Mosher's operation, running the risk attendant on operating in the dark when an open method was available to me. At the smallest indication of the pouch filling I shall dissect it out, and, ligaturing the neck, in view of what has been said about recurrence, I shall stitch the bundles of muscular fibres together, to see if that makes any difference. The tendency in both operations is towards recurrence.

Tuberculosis of the Larynx in a Female Patient; Dyspnœa and Regurgitation of Liquids during Drinking relieved by Intra-laryngeal Operation.—J. Dundas Grant.—Mrs. B——, aged thirty-one, had suffered from gradually increasing hoarseness for three years, and complete loss of voice for six months. She went to the Sanatorium at Bournemouth in August of this year. While there she began to have difficulty and pain on swallowing, which first showed itself by a feeling of choking during drinking. Shortness of breath and difficulty in

breathing developed later, and about fourteen days after its development (on October 30) Dr. Davison, of Bournemouth, who sent her up to Brompton Hospital, reported that there were signs of pulmonary mischief. I found shiny infiltration of both aryepiglottic folds and ventricular bands, with nodular infiltration of the upper surface of the right vocal cord. There was a tuberculous deposit in the interarytænoid space interfering with a closure of the vocal cords, producing inspiratory stridor and also regurgitation of liquids into the larynx during swallowing.

I removed a thick transverse piece of tissue from the interarytænoid space. The breathing was then easier. She was ordered anæsthesin powder for inhalation by means of a LeDuc's tube, and to drink fluids through an indiarubber tube.

On November 13 galvano-caustic puncture was made in the right ventricular band and vocal cord and in the left ventricular band, and on November 23 again in both ventricular bands.

On November 24 the ventricular bands had shrunk so as to permit of a view of the anterior commissure, where there was a rounded nodule projecting between the cords. This was removed by Landgraf's forceps. It was seen that the cords were approximated at their posterior extremities and did not separate sufficiently during inspiration. My intralaryngeal forceps, opening from side to side, were introduced and opened so as to dilate the larynx.

There is now no pain on swallowing and no regurgitation of liquids during drinking, the patient not finding it necessary to use anæsthesin before taking food, and although there is a slight degree of stridor on inspiration there is no difficulty in breathing, and she can run upstairs, which she was frequently quite unable to do. The voice is a little more than a whisper. She is taking syrup of garlic, but as she had little cough or constitutional disturbance it is scarcely a case for demonstrating the efficacy of the remedy. Subjectively, however, she is feeling very much better.

Regurgitation of liquids in tuberculosis of the larynx is generally due to loss of substance from ulceration in the interior of the cavity combined with rigidity of the framework produced by infiltration, and recovery of the power of drinking normally is exceedingly rare. The action of the transverse bar of tuberculous tissue in propping apart the side-walls of the larynx is a most unusual cause of regurgitation.

Dr. W. HILL: The suggested cause is important. Entrance of food into the larynx causes coughing, and is followed by regurgitation, and that is probably because the arytenoids cannot come together. The vestibule of the larynx prevents things entering into the larynx.

Fibro-papilloma of Larynx simulating Laryngeal Tuberculosis in a Middle-aged Soldier; Pendulous Epiglottis; Removal of Growth by means of Snare and Forceps.—J. Dundas Grant.—The patient, a soldier, states he was discharged on account of tuberculous laryngitis; he had suffered from sore throat, shortness of breath and huskiness for six months, and from pain in front and back of the chest for nine months. He is under Dr. Batty Shaw, at Brompton Hospital, for pulmonary tuberculosis, the upper and middle lobe of the right lung being involved. Tubercle bacilli had been found in the sputum in France but none here.

I saw him on October 23, when he was complaining of extreme hoarseness. The epiglottis was so pendulous as to conceal the interior of

the larynx, but on elevating it by means of Mount Bleyer's epiglottis-lifter I found the larynx occupied by a large mass which was manifestly a fibro-papilloma.

On the following occasion an endeavour was made to extract it by ordinary forceps without any effect beyond the removal of a tiny fragment. The site of the growth was doubtful but it appeared to be at the front of the larynx. I then used a simple wire snare, the loop being placed transversely, while the epiglottis was raised by Mount Bleyer's instrument, and I removed a good half of the tumour; I was then able to see that it arose from the anterior part of the left vocal cord, and by means of my safety intralaryngeal forceps I cleared away the bulk of the growth, leaving the vocal cord practically clear. Without this combination of instruments the removal of this growth would, under the circumstances, have been of the utmost difficulty. In a week's time the voice was almost normal and I applied a solution of chloride of zinc to the site of removal. On November 27 the voice was quite good and the larynx clear. Microscopically the section showed the structure to be that of a papilloma with round-celled infiltration at its base. "In the absence of giant-cells or caseation it was not possible to attribute the round-celled infiltration to tubercular infection."

Dr. WYLIE: I consider the best way to draw the epiglottis forward is by a thread inserted through the epiglottis with Horsford's needle. An assistant is therefore not required. I have removed several papillomata with the snare, but the growths are generally subglottic and any piece remaining is removed by forceps. I have sent a list to the JOURNAL OF LARYNGOLOGY, RHINOLOGY AND OTOTOLOGY.¹

Multiple Papillomata of the Larynx in a Child; Tracheotomy and Removal under Suspension Laryngoscopy; Decanulisation; Subsequent Recurrence of Stridor; Reintroduction of Tube; Larynx found almost clear by Indirect Laryngoscopy; Tentative Removal of Tube.—J. Dundas Grant.—A boy, aged four, was sent to me at Brompton Hospital in June, 1917, on account of the impossibility of removing a tracheotomy tube which had been inserted two months previously for difficulty in breathing, such as to threaten his life. I was able, on laryngoscopic examination, to see that the larynx was occupied by several papillomata. Under suspension laryngoscopy I removed a large number of small papillomata about the size of small split-peas. Subsequently I removed his adenoids. On July 4, owing to the high position of the former tracheotomy, which involved the cricoid cartilage, I made a fresh opening, about 1 in. lower down, and inserted the same tube as before. A repetition of suspension laryngoscopy revealed the complete absence of papillomata. His voice soon returned; he was able to breathe without the tracheotomy tube, and he was sent home. Two months later his difficulty in breathing returned, and the tracheotomy tube had to be re-introduced. He was sent back to me, and I saw a papilloma attached to the left vocal cord, there being, however, a fair amount of breathing space in the larynx. I removed the papilloma by direct laryngoscopy and also enucleated his tonsils, which were extremely large and buried. He can now breathe through the larynx, and his voice is good, but I am advising the retention of the tracheotomy tube during the winter months in the expectation that in the interval the

¹ JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY, vol. xxxiii, pp. 33-71.

tendency to regeneration of papillomata may disappear, remembering the beneficial effect of tracheotomy, even without removal, in cases of papillomata of the larynx.

MR. TILLEY: Did Dr. Grant try the peroral method first, and find he could not succeed with it? It seems a pity to connive at tracheotomy unless there are difficulties which are insurmountable by the peroral method. We should reserve tracheotomic bronchoscopy for cases in which there is severe dyspnoea, or some other emergency, which makes it imperative to open the trachea.

DR. DUNDAS GRANT: The answer to the first part of the question is in the affirmative. The operation was done under suspension laryngoscopy, and salicylic acid was applied at the same time.

DR. W. HILL: Without doubt there is a mortality from these cases in young children. There is a very small glottis, and tracheotomy has often to be done, and the last condition of the case is sometimes worse than the first. I have not had a case of multiple papilloma of the larynx for six years; if I had I should have used either radium or thorium. Results from thorium are said to be marvellous, and we have heard nothing of recurrences. The treatment of warts by thorium has been most successful. There are difficulties in the way of keeping a child under an anaesthetic and holding it in one position for half an hour.

DR. JOHNSON HORNE: Is Dr. Hill mindful of the lately discovered fact that epithelioma of the larynx can be brought about by the use of radium?

Lipoma of Larynx removed by Operation (Specimen exhibited).

—**Hunter Tod.**—A male, aged fifty-eight, was admitted to London Hospital in June, 1916. He had suffered from increasing difficulty of breathing for over twelve months, chiefly at night time and after exertion. Later there was an aggravating cough, sometimes resulting in spasmodic attacks of dyspnoea. A variable inspiratory stridor was present.

On examination the interior of the larynx could not be seen owing to a large sessile tumour, almost blocking up the entrance of the larynx. It seemed to be attached to the posterior part of the larynx and interarytenoid space on the left side. On quiet breathing the growth did not move very much, but on deep inspiration it was sucked down towards the glottis. The surface was smooth and sparsely covered with fine vessels. On touching it with a probe it seemed semi-solid. It had a yellowish appearance and not the bluish translucent look of a cyst.

Under a general anaesthetic the growth was removed by the "suspension" method by means of an ordinary Krause's snare passed along a Hill's slotted laryngoscope. The patient did well.

On examining the larynx two days after the operation the point of origin of the growth could be seen as an irregular, yellowish, raw surface, as if the growth had not been completely removed; but healing gradually took place and three months after the operation the larynx looked normal. The growth itself was about the size of a pigeon's egg, and seemed to be composed of fatty tissue. The covering mucous membrane was only loosely attached to the underlying tissue, from which it rapidly retracted.

Multiple Papillomata of Larynx removed by Operation (Suspension Method) after Tracheotomy: Death Five Weeks later from Acute Membranous Tracheitis and Bronchitis.—**Hunter Tod.**—Boy, aged four, admitted to London Hospital on September 7,

1917, suffering from attacks of dyspnoea and stridor, especially when asleep. Symptoms were stated to have dated from birth, but got worse for the two weeks previous to admission to hospital. The vocal cords could not be seen on examination with the laryngoscope owing to an overhanging epiglottis. The child was not hoarse, but would only speak in a whisper.

On September 12 the child was given a general anaesthetic, but before complete anaesthesia was obtained marked signs of laryngeal obstruction occurred rendering it necessary to perform tracheotomy at once as the child was *in extremis*. After the skin incision was made the trachea was incised straight away; to do this the thyroid isthmus, which seemed to be very large, had to be cut through. After the insertion of a tracheotomy tube the breathing soon became normal again. The larynx was examined by the direct suspension method and multiple papillomata were found to fill up the larynx. They grew from the right vocal cord and just above it. They were completely removed, a clear view of both cords afterwards being obtained.

At first the result of the operation seemed most successful, and after the third day there was free breathing through the mouth when the tracheotomy tube was plugged. The tracheotomy wound was small and healed well.

Three weeks after the operation there was some redness round the wound and some mucus began to be coughed up from the trachea. This was accompanied by an evening rise of temperature from 100° to 101° F. for two or three days. The red area round the wound slowly increased with induration of the subcutaneous tissues. For the next two weeks the mucous secretion increased in quantity, especially after severe attacks of coughing. These attacks became worse and were associated with extreme dyspnoea, and finally, in addition to the mucus secreted, there was occasionally a considerable amount of blood. As it was obvious that the child was getting steadily worse, I decided on October 17 to make a further examination. To relieve spasm a small quantity of 1 per cent. cocaine with 1 in 8000 adrenalin solution was made to trickle into the trachea along the tracheotomy tube. A very small quantity of chloroform was administered. On removing the tracheotomy tube the opening was found to be lined with thick gelatinous-looking membrane about $\frac{1}{8}$ in. thick. On inserting a small bronchoscope this membrane could be seen flapping in the trachea during the act of respiration and extended down in irregular masses as far as the bifurcation of the trachea. I removed a considerable quantity of this membrane which lined the opening and upper part of the trachea.

During the examination the child had an extremely severe spasm of dyspnoea and death seemed imminent. Oxygen was administered and a few drops of the cocaine and adrenalin solution were again applied. It was obviously useless to do anything further in the way of surgical interference, but I advised that if further attacks of dyspnoea occurred a soft rubber catheter should be passed into the trachea a few inches beyond the tracheotomy tube. This certainly relieved one or two of the subsequent attacks of dyspnoea, but eventually the child died on October 19 in extreme distress.

The clinical picture was very similar to that seen in a patient suffering from an intrathoracic growth situated at the bifurcation of the trachea, and causing death by obstruction of the bronchial tubes.

Report of Autopsy (Dr. H. M. Turnbull, London Hospital).—Specimen

shown. "Patches of thin, granular membrane in upper compartment of larynx. Gelatinous, somewhat tough, yellowish-grey membrane (0.3 cm. thick) lining the lower compartment of the larynx and the walls of the tracheotomy opening in the first, second and third tracheal rings, and almost completely filling the trachea, the left bronchus and the bifurcation of the left bronchus into the bronchi to left and lower lobes. Right bronchus free. Purulent bronchitis and a few areas of collapse in portions of both lungs."

Films from Larynx (prepared at time of autopsy).—"The films were stained (1) with Gram and neutral red, and (2) by Neisser's method. There were numerous Gram-positive streptococci, in chains up to twelve cocci. There were a few staphylococcal groups of Gram-positive cocci. There were still fewer Gram-positive bacilli. These were slightly curved rods measuring 3 to 8 μ by 1 μ ; they exhibited none of the morphological characteristics of diphtheria bacilli."

Microscopical Sections of growth removed from larynx confirm the diagnosis of papilloma of larynx (specimen shown).

Dr. D. R. PATERSON: With regard to Mr. Hunter Tod's second case, I had a case where membranous exudation occurred a few days after operation in similar circumstances, and the child died. Another child had membranous exudation some time after the operation, and we had difficulty in getting it free: the child was ill for a long time, and an autogenous vaccine had a good result. Ultimately the child was operated upon three times, and the tube was left out as the condition subsided. In neither case was there diphtheria infection.

Mr. E. D. D. DAVIS: I have had an epidemic of cases of papillomata, and have curetted four cases, but they all recurred. In three cases the papillomata disappeared when the children reached ten years of age. With regard to the membrane of obscure origin, it is curious, after enucleating tonsils, how a thick white slough collects on the surface of the cavity. Can this case be of a similar nature? I had one case of enucleation of tonsils in which the inaccurate diagnosis of diphtheria was made, and the patient was sent to a fever hospital.

Mr. HUNTER TOD (in reply): The point about my second case has been rather missed. Mr. Davis compares the condition to that of the membranous slough seen after enucleation of the tonsils; that is common knowledge. This case is almost unique. The operation was successful, and, as you will have noticed, there are no papillomata in the specimen. They were removed by the operation. As the child was well and was running about the ward for three weeks, the infection of the wound cannot be considered the result of the operation. The reason for postponing a further examination under a general anaesthetic was owing to the symptoms of lung infection. It was only because the spasms increased with attacks of hæmorrhage that one felt that something more must be done. At the second examination a thick gelatinous membrane was peeled off, and although a culture was not taken at the time, this was done at the autopsy, when streptococci, but no Klebs-Loeffler bacilli, were found.

(To be continued.)

ABSTRACTS.

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Authors of Original Communications on Oto-laryngology in other Journals are invited to send a copy, or two reprints, to the JOURNAL OF LARYNGOLOGY. If they are willing, at the same time, to submit their own abstract (in English, French, Italian or German) it will be welcomed.

PHARYNX.

Focal Infections in Childhood.—Sandford Blum. "Amer. Journ. Med. Sci." November, 1918.

The theory of focal infections is by no means new, but unfortunately attention has recently been concentrated upon certain potential foci of infection to the practical exclusion of others at least equally important. It follows that avoidable mistakes in locating the focus are frequently made and the results of treatment are correspondingly disappointing. Much attention has been directed toward endocarditis in relation to foci of pathogenic bacteria in the mouth and fauces. The presence of such foci with the subsequent development of endocarditis is by no means conclusive evidence of a causal relationship, and the complete absence of reports of identification in endocardial lesions of the specific bacilli present in the suspected foci constitutes a deplorable breach in the chain of reasoning. That under proper conditions endocarditis can originate from these sources may without question be assumed; but the frequency in childhood of alveolar disease and tonsillitis when contrasted with the rarity of endocarditis justifies the conclusion that such a sequence is certainly exceedingly rare. The assumption that streptococci harboured in the tonsils possess especial selective powers against the endocardium and joints seems unjustified. The presence of pathogenic micro-organisms in a certain locality does not constitute it an infective focus. Colon bacilli in the intestines may remain indefinitely and cause no infective process; pyogenic bacteria may be present in the middle ear for years without producing secondary disease; streptococci, staphylococci and diphtheria bacilli may be indefinitely harboured in the tonsils without deleterious effect. Recovery of the same type of bacillus from the primary and secondary lesion will prove the connection. But it is possible for the primary focus to be healed when the secondary lesion is discovered; under these circumstances the association is incapable of positive proof—it can only be conjectured. Further, to assume that in cases in which a distinct metastatic bacterial process has been established, as in endocarditis or arthritis, eradication of the primary focus will cure the secondary lesion is fallacious; the most that can be expected is that further deleterious increments from the original source may be excluded. Evacuation of abscess-cavities, removal of diseased appendices, surgical relief for otitis media and mastoiditis require no comment for their approval. Far differently must be viewed the promiscuous practice of tonsillectomy. The common practice of tonsillectomy as a diagnostic measure is reprehensible and should be discontinued, because it is unscientific in that it is a surgical procedure undertaken without definite indication, and diverts attention from other diagnostic procedures which not infrequently would disclose the obvious cause of the disease. Moreover, focal infections may actually be created by operative procedures such as tonsillectomy and orthodontia.

Thomas Guthrie.

NOSE.

The Vaccine Treatment of Ozæna.—Otto Glogau. "The Laryngoscope," May, 1918, p. 380.

Glogau states that the history of the study of the ætiology and treatment of "ozæna" is full of jubilant enthusiasm and bitter disappointment. He cannot endorse the triumphant statements of Perez the prophet, and of Hofer and Horn, his most ardent worshippers. Hofer prepared an ozæna vaccine consisting of the cocco-bacillus of Perez, found in the above-described way and derived from seven different strains, to which he added a culture from the nose of healthy dogs. Hofer and Kofler injected a number of ozæna cases and published a report of almost marvellous cures. Kofler examined the patient's nose and throat and dictated the statements to Hofer, who wrote them into the patient's history and then injected the patient with the increasing doses of vaccine. "Less odour, decreased number of crusts, pharyngitis turning moist" are very vague statements. The wish is often father to the thought. Glogau admired his former colleagues, Hofer and Kofler, for their optimism. After watching scrupulously for a number of weeks Glogau could not be convinced that even one case had been cured. All the American septs could notice was the presence of fætor, mostly of the severest type, and of crusts in all noses.

The *Bacillus bronchisepticus*, which was proven to be the specific organism of canine distemper, is morphologically almost identical and in many cases biologically similar to the Perez organism. Let us bear in mind (1) that Hofer could not isolate the Perez bacillus from the crusts, but had to inject animals and then isolate it from their nasal discharge; (2) that Hofer adds to his vaccine a strain from the normal discharge of the dog; (3) that Perez claims the cocco-bacillus to be normally present in the nasal cavities of the dog; (4) that McGowan has shown that rabbits are specially liable to distemper, and he holds that the rabbits used in Perez' experiments were suffering from distemper.

In order to control the claims made by Hofer, Guggenheim and Horn, Glogau undertook an investigation to prove or disprove the therapeutic value of the ozæna vaccines in vogue. If the Wassermann test was positive the patient was excluded from vaccine treatment. Wherever there was a suspicion of tuberculosis or sinus involvement, the patient was also refused vaccine treatment. The following types of vaccine were used: Hofer's original, used in two cases, with negative results. Auto-genous vaccine, employed twelve times; one case transient improvement eleven cases negative result. Polyvalent vaccine, prepared from seven strains. Stock vaccine Perez (Horn), used in five cases: three cases negative result, one case slight improvement, another showed a loosening of the crusts. These results were, however, only transient. Mixed Perez vaccine (Horn). Parke Davis ozæna vaccine (Perez). Parke Davis ozæna vaccine (combined) used five times; negative result in three cases, and slight transient improvement in two cases. Glogau states that his statistics lack enthusiastic exaggeration. Bacteriological examination gave the following results: Out of seventeen cases injected there was demonstrable in the nasal crusts—bacillus Perez, five times; bacillus Abel, once; bacillus Friedländer, three times; pure staphylococci, twice; staphylococci and Gram-negative bacillus, twice; staphylococci and Friedländer bacillus, twice; *Micrococcus catarrhalis*, once. The pathological changes on the turbinals of the injected rabbits showed nothing characteristic of

ozæna. Clinically, the noses of the injected rabbits resembled very much the conditions found in those suffering from distemper.

Glogau concludes that ozæna is no clinical entity. In those cases where the *Cocco-bacillus fatidus* (Perez) is found, there has been transmitted directly or indirectly from the animal's nose (dog, rabbit, etc.) the *Bacillus bronchisepticus* upon a previously predisposed soil. There is no doubt in Glogau's mind that ozæna will outlive its vaccine treatment.

J. S. Fraser.

Röntgenological Interpretation of Accessory Sinus Variations.—H. J. Prentiss. "Amer. Journ. of Röntgenology," August, 1917, University of Iowa Monographs, vol. i, No. 3.

A careful article demonstrating the numerous variations in the anatomy of the accessory sinuses. Illustrated by numerous semidiagrammatic drawings of specimens in the anatomical laboratory of the Iowa State University. Unsuitable for abstracting.

J. K. Milne Dickie.

Perineural Anæsthesia for Radical Surgery of the Maxillary Sinus.—Gatewood. "The Laryngoscope," August, 1918, p. 616.

The infra-orbital and posterior superior dental branches of the superior maxillary are the nerves supplying this region. Before entering the canal the maxillary nerve gives off the posterior superior dental nerves, which pass forward above the molar teeth. They supply the oral mucosa, the molar teeth, the mucous membrane which lines the maxillary sinus and the periosteum. In passing through the infra-orbital canal the nerve gives off the superior dental branches. The middle and anterior superior dental branches supply the alveolar process, sending small twigs to the teeth. The infra-orbital nerve divides into from two to four branches, which send off finer branches to the oral mucosa, the floor and lower lateral aspect of the nasal cavity, and the incisor and canine teeth. Anæsthesia of this region may be easily brought about by the injection of a local anæsthetic into the vicinity of the infra-orbital and posterior superior dental nerve-trunks. The technique for blocking these nerves is as follows:

(1) Infra-orbital: The infra-orbital canal is palpated with the index-finger, which is kept on this point. With the thumb of the same hand the lip and cheek is drawn up to expose the field of operation. The needle is inserted into the buccal fold slightly distal to the apex of the canine teeth, passed upward and slightly inward for three-fifths of an inch, infiltrating the tissues slowly as the needle is advanced. We are now in the region of the infra-orbital canal; here the remainder of the anæsthetic solution is deposited. Gentle massage of this area will hasten the absorption of the anæsthetic.

(2) Posterior superior dental nerve: This injection is guided by the condyle of the palatal process of the maxilla. The point of insertion of the needle is in the buccal fold corresponding to the middle of the disto-buccal root of the second last tooth from the condyle, this being the first or second molar respectively depending upon the presence or absence of the wisdom tooth. The needle is now passed upward, backward and slightly inward, passing over the apices of the buccal roots of the second or third molar, "using an angle of about forty-five degrees to the acclusal plane of the teeth." The tissues are infiltrated slowly as the needle is pushed forward, and the remainder of the anæsthetic solution is deposited after the needle has disappeared for about four-fifths of an inch. Two c.c. of a 2 per cent. solution of novocaine is used in each of the above injections.

J. S. Fraser.

An Operation for Bony Occlusion of the Posterior Nares.—Leon E. White. "The Laryngoscope," August, 1918, p. 571.

The bane of operations for bony occlusions of the posterior nares has been the difficulty of obtaining a permanent opening. Loeb says: "Bony occlusion of the posterior nares may be relieved by removing the bony mass by means of chisels or burrs driven by a dental engine. After the opening is made it may be enlarged by cutting forceps." The submucous resection method is, however, given the preference by most of the later writers. The muco-periosteum is raised on the septum down to the obstructing plate, from the anterior surface of which it is gradually separated until its outer border of attachment is reached. The flap is then thrown well outward and the bone plate is removed by chisels and conchotomes. After the bone-partition is thoroughly removed the flap is replaced and an incision is made vertically through the middle of the muco-periosteal flap, which covers the nasal surface of the obstructing plate. Expanding forceps are now introduced, and the redundant muco-periosteal flap is made to coapt and cover the whole margin of the bone wound. After a failure in his first operation it occurred to White that, if the raw surfaces were further apart, the danger of closure would be greatly lessened. As perforations in the septum usually stay open, White decided to make such a perforation including the previously obstructed choana. He prefers general anaesthesia. After the septal operation has been completed the obstructing bony plate can be readily perforated with a long, flat chisel held close to the septum. A triangular section is first removed, the forefinger being placed in the posterior nares to guard against accident. The bone is next punched out as thoroughly as possible. The posterior end of the septum is then removed by rongeurs or curette. The edges of the bony opening are smoothed off carefully and covered by the mucosa, which has been previously cut and elevated. Each nostril is then packed with a strip of gauze covered with rubber tissue. The packing should be removed in twenty-four hours, and the subsequent treatment is only such as is needed to keep the nose clean and free from crusts. If the operation has been done thoroughly no further packing is necessary.

CASE. Female, aged eighteen, suffering from congenital bilateral atresia. The face was symmetrical, and, although the patient was a mouth-breather, the high palate was not high. The hearing had always been good and both drum-membranes were normal. There was some lack of resonance in her voice. The nose was rather narrow, but the mucous membrane was fairly normal. The choanal obstruction could be seen both anteriorly and posteriorly. After successful operation (as above) the patient stated that food tasted "much better," and that she could now smell as well as anyone and breathe freely through both nostrils. She thought her memory was better. *J. S. Fraser.*

Diseases and Deformities of the Nose versus Neuralgia of the Head.
—Stauffer. "The Laryngoscope," September, 1918, p. 698.

Stauffer holds that when all the head-pains or neuralgias occurring as a result of diseases and deformities in the nose and its accessory sinuses are accounted for, there will be but few to attribute to other causes. A knowledge of the origin and distribution of the trigeminus is imperative for a proper understanding of the various obscure reflex pains associated with diseases in the head. It is difficult to conceive of pain in the course of a nerve as a pure neurosis without a lesion either in the nerve-endings or nerve-fibres. Stauffer believes that a very large majority of these

obscure neuralgias (so-called) in the head have their origin in diseases of the accessory sinuses or in deflections of the nasal septum or enlarged middle turbinals.

J. S. Fraser.

Decompression Operation on the Hypophysis by the Nasal Route.—
Otto J. Stein. "The Laryngoscope," May, 1918, p. 376.

The author approves of the technique advocated by Oscar Hirsch, which gives ample room for working with the minimum of tissue loss. Stein believes the ideal anæsthesia to be morphine-hyoscin or scopolamine-morphine with flake cocaine locally on the septum and sphenoid. Hurried operations should be deprecated. The only case Stein lost from operation was of this nature: Male, aged forty-seven, had only central vision. Both fundi showed beginning peripheral atrophy; headaches; no perverted pituitary symptoms. Owing to certain circumstances no routine physical examination (including urinalysis) was made in the hospital. On entering right sphenoid Stein encountered a cyst, which did not rupture until he entered the left sphenoid. Two drachms of straw-coloured fluid, slightly blood-stained, escaped. The patient had a restless night, vomited constantly, and had severe headache; the temperature later, rose to 102° F. Acidosis was diagnosed from the vomiting, pulse, headache, urine examination and breath. Death on the second day following operation. [Meningitis?—Abs.]

A good X-ray picture will show the size of the sphenoidal cavities, a widening and deepening of the sellar floor, even a shadow outline of the glandular mass; enlargement or absorption of the clinoid processes and increase or decrease of the diaphragm opening. Ordinarily the floor of the sella presents at about the superior posterior angle of the inner wall of the sphenoid cavity. The bone at this point is usually quite thin and easily broken through. Occasionally one finds a hard and thick wall in the region of the promontory. It is always necessary for the operator to keep working in the median line to escape injury to nerve, artery and cavernous sinus. This in itself is a strong argument in favour of the septal route. The entire operation is confined between two muco-periosteal flaps, and with proper aseptic technique these flaps can be brought together at the end, thereby avoiding any danger of after-infection. Most of the tumour cases involve the anterior lobe first, and in their growth seem to meet least resistance at the floor of the sella. The dural diaphragm above appears to offer greater resistance than the bony floor. One of Stein's cases showed the two types of pathology: the adenoma appeared first, later the cyst. Cushing has found that cysts, even if exposed and evacuated, tend to refill with return of the pre-existing visual defects.

J. S. Fraser.

LARYNX.

Treatment of Malignant Disease of the Larynx.—Beck. "The Laryngoscope," March, 1918, p. 131.

Beck states that the reasons why surgery is so often defeated may be stated as follows:

(1) The patients present themselves too late for us to make an early diagnosis; (2) failure to make an early diagnosis when the patients do come in time; (3) timidity in operating extensively, especially in removal of the tributary glands; (4) implantation carcinoma along the field.

Cancer of the larynx is favourable for operation because an early diagnosis is usually possible. Hoarseness in an older individual (particularly in men) that does not disappear with or without treatment within two or three weeks should be looked upon with suspicion and carefully watched for cancer. Cancer of the larynx is usually found in the anterior portion of the cords, and from this region the lymphatic distribution is very small and secondary glandular involvement is a long time in developing. Removal of the larynx is an extensive and, to the patient, a depressing operation. Laryngectomy is also associated with considerable risk to the patient's life from complications such as shock, pneumonia and mediastinitis. In order to overcome some of these great objections to the complete removal, Beck has developed the technique of laryngeal fissure and removal of the neoplasm by means of the Percy coagulation method. Beck considers Percy's method superior to laryngectomy because, (1) the patient will consent more readily to an operation when he may be promised that he may have a voice, even though it will not be normal; (2) he may even hope to have a normal breathing-tube and not have to wear a permanent tracheotomy tube; (3) the operation is less dangerous.

Carcinoma of larynx.—Thirty-seven cases treated; thirty-four operated upon; twenty-six followed up to recent date. Of these five are still alive and apparently without any recurrence. The procedures were three laryngectomies (eight years, five years and three months since operation); one laryngeal fissure (five years since operation); one indirect laryngoscopy (now eleven and a-half years since operation). The remaining twenty-one cases are all dead. *J. S. Fraser.*

Syphilis of the Epiglottis.—Harmon Smith. "The Laryngoscope," March, 1918, p. 175.

CASE 1.—Female, aged thirty-six, denied any venereal trouble; difficulty in swallowing for six months; cough, slight temperature, loss of weight suggesting tuberculosis. The epiglottis was markedly thickened, but had not the characteristic cedematous appearance of tuberculous infiltration. The colour was an intense bluish-red. Wassermann test positive. One injection of salvarsan resulted in the complete dissolution of the epiglottic involvement.

CASE 2.—Female, aged twenty-eight, lost twenty pounds' weight in a year, with difficulty in swallowing, and cough, with blood-tinged expectoration. Examination revealed ulcerative destruction of the soft palate and a deep, ragged ulcer on the posterior pharyngeal wall. The epiglottis was partially destroyed by a large slough. Temperature 100° F. Wassermann positive. Salvarsan, followed by internal treatment, resulted in healing the ulcerative area and extrusion of the broken-down cartilage of the epiglottis. *J. S. Fraser.*

EAR.

An Attempt at Simplification of the Physiology of the Vestibular Labyrinth.—Isaac H. Jones. "The Laryngoscope," June, 1918, p. 473.

Perfect equilibration is accomplished through an harmonious co-operation of the eye, the muscle-sense, and the "balance-sense" of the ear. After loss of one of the senses responsible for equilibration com-

pensation may take place to a certain extent: the tabetic may be taught to avail himself of the visual-sense and of the balance-sense of the ear. The blind man is able to walk by the aid of a cane until deprived of the guidance of either the muscle-sense or the balance-sense of the ear. Deaf mutes, in whom the ear-sense is destroyed, are enabled to maintain their balance by means of sight and muscle-sense and develop inco-ordination only in the dark or in the water.

When the human being becomes a bird he suddenly finds himself in an entirely new environment. On what does the aviator rely in order to maintain his equilibrium? When he is sailing through the clouds or in the dark his eyes cannot give him the slightest information as to his position in space—not even whether he is “right side up.” The muscle-sense plays a part, but it is hardly conceivable that the weight of his body could determine his position in space merely by the sense of gravity. It is obvious that he relies primarily upon his vestibular labyrinth. It is easily conceivable that some of the unexplained accidents in aviating may be due to the decrease of the usual air pressure when at great heights. Prudence would suggest a most careful examination of the function of internal ears before taking up flying as an occupation. Every portion of the “balance apparatus” should be declared intact and normally functioning. If after the Bárány tests the candidate shows normal responses in nystagmus, past-pointing and falling, he is fit for the service; if he does not he is unfit. The standard for entrance in the Aviation Section of the Signal Corps of the United States Army has been approved, and is to constitute the requirement for admission into this service.

J. S. Fraser.

Contribution to the Study of the Physiology of the Eustachian Tube.—
C. Caldera. “*Arch. Ital. di Otol.*,” vol. xxix, No. 3, September, 1918.

Following up some experiments by Prof. Dionisio the writer attempted to determine whether the Eustachian tube is normally patent or not. The method he employed was to inflate the tube through a glass catheter by means of a continuous current of air. At the same time a bright light from an endoscopic bulb was held opposite the tubal orifice. The tympanic membrane was observed by a colleague. No light was seen to penetrate to the middle ear even on movements of swallowing, during which act the tube is believed by most otologists to open. In other cases in which air did undoubtedly enter the middle ear no light passed. Caldera accordingly gave up this method of research. He draws attention, however, to some facts which he has observed which may help to settle the question.

He found three subjects in whom there had been formed a cicatricial diaphragm or false tympanic membrane. In all three cases he noticed that the membrane moved alternately inwards and outwards with the movements of respiration. This would seem to demonstrate that in normal conditions the tube is open. Caldera thinks that the objection that the tubes in question were not normal can be ignored. He explains the condition by the fact that the membrane had not the support of the malleus nor of the middle strong fibrous layer of the tympanic membrane, and was therefore much more supple.

The writer maintains that the above facts confirm the contention of Hammerschlag and Lucae that the tube is normally open to currents of air during respiration.

J. K. Milne Dickie.

The Medical Profession and the Deaf.—Morgenstern. "The Laryngoscope," August, 1918, p. 612.

Morgenstern states that only two people out of a hundred who grow hard of hearing or deaf after school age take up the study of lip-reading. Many ear specialists tell their incurably deaf patients that they "ought to study lip-reading," but the advice is not emphatic enough. The average adult who has partially or wholly lost his hearing becomes morbid and indifferent to what is going on around him. The lip-reading deaf person, on the other hand, faces the world with an entirely different attitude. The word "lip-reading" is perhaps not the best name for the study. What it implies, however, is that the eyes have been trained to recognise rapidly the externally visible movement of the speech organs, which appear as an aggregate in word and sentence pictures; and that the mind has been trained to interpret these movements and to construct the word and sentence pictures into spoken language. The most important step is to make the student concentrate, think and listen. Many of the deaf find this irksome at first. *The partially deaf adult should begin the study of lip-reading before his defect in hearing has become noticeable.* The relief that the eyes give to the weakened ears, which suffer under the constant strain of listening, is too obvious to require special mention or explanation. Usually *from three to six months*—in exceptional cases a year—are required to develop skill. Morgenstern herself has travelled for three months alone in Europe, understanding several languages of the continent by sight, and enjoying the experience. Another lip-reader of her acquaintance holds a responsible position in a banking-house, and she knows of boys and girls who lip-read their way through high school or college, often at the head of the class. The adult deaf are now organising in many of the larger cities of the United States in order to assist one another, to provide social life, and to offer opportunities for studying lip-reading. *J. S. Fraser.*

The Deaf: Their Education: Improvement of Conditions; Responsibilities and Participation of the Profession.—J. D. Wright. "The Laryngoscope," June, 1918, p. 497.

Education of the public has been so successful that the question of improving speech-teaching conditions by segregating the orally taught from those with whom finger-spelling and the sign language are used is now discussed in every state of the Union. Segregation is being prepared for in a number of states where it had never existed before. We want to plead for greater attention to the training of the pupils to use the powers of sound perception which they possess for the comprehension of language. One-third of the pupils possess sufficient power of perceiving sounds that lie within the range of the speaking voice to enable them to learn to comprehend language through the ear. These children are, however, too deaf to hear speech at ordinary conversational distances. The intensity with which the sound affects the hearing mechanism varies inversely as the square of the distance between that mechanism and the source of the sound. A child who cannot hear a word spoken a yard from his ear may be able to hear that word if it is spoken an inch from his ear, since his ear will then be affected 1296 times as powerfully. A child who is so deaf as to require words to be shouted an inch from his ear will never *spontaneously* learn to understand language or to speak, but he can be taught to do both. It is not a process of increasing the power of hearing, but of training the brain to interpret sounds into ideas.

It is only that the child's brain has now been educated to associate ideas with the sounds that he was just as capable of hearing at the beginning as at the end of the course of instruction. If the reader were suddenly transported to a country of whose language he was ignorant he would understand nothing of what was said to him, because his brain had never been educated to associate those sounds with ideas. If he hears the words and sentences often enough he will learn to understand. Deaf children who yet have some slight power of sound-perception never get a chance to develop this association of ideas with sounds, because they do not hear well enough. Their actual physical deafness is increased by what we might call a psychological deafness. This means of access through his ears is the line of least resistance—the line of inherited tendencies. When it is not open to us we must use the untrodden and unfamiliar road of the eye in comprehending spoken language. The superintendents and teachers must be made to believe it can be done and that it is desirable to do it. [Recently the abstractor advised the use of a hearing-tube in these cases at a deaf and dumb school. The headmaster reports good results.—J. S. F.] *J. S. Fraser.*

A New Ear Test for Malinger.—**Frederick F. Teal.** "The Laryngoscope," August, 1918, p. 615.

The person is blindfolded and told in a friendly manner that if he is really deaf there is no disposition on the examiner's part to overlook it. But he is also warned that if he tries to behave dishonestly he is sure to be "tripped up." Air-conduction is tested and of course is negative. The Weber test is then used, and usually (though reluctantly) he hears the fork in the deaf ear. Bone-conduction over the mastoid is next tested, and again he admits hearing the fork. He is then commended for his answers and assured that he has answered as he should.

The real test is now used. After saying you want to try the last test (bone-conduction) once more, a non-vibrating fork (or lead pencil, flat end) is placed over the mastoid to make him think he is being tested in the same manner, but *at the same time* a vibrating fork is brought close to the auricle with the other hand to test the air-conduction. If he is simulating deafness he will of course answer that he hears the fork (under the impression that he hears the sound through the bone), and the fact of a normal path of air-conduction is established. If he is really deaf he will, of course, not hear the vibrating fork.

J. S. Fraser.

Lateral Sinus Thrombosis: Three Cases.—**D. H. Ballou.** "The Laryngoscope," June, 1918, p. 464.

Ballou records three cases of lateral sinus thrombosis following chronic middle-ear suppuration. The thrombus was on the right side in all cases. The symptoms were characteristic, showing the usual triad: chills, intermittent fever and sweats. There was a marked flush of the right cheek only, *i. e.* the side of the lesion. Blood-cultures, eye grounds and lumbar puncture were negative in all cases. X-ray showed small sclerosed mastoid, sinus far forward, but no thrombus. Operation: In all cases the mastoid was sclerosed, but vascular. Pulsating pus under tension was present. The lateral sinus was superficial, very far forward, gangrenous, or covered with lymph and granulations. After the radical mastoid operation all diseased bone was removed until apparently healthy sinus was reached in both directions. Ballou holds that where the

thrombus can be removed and free bleeding obtained at both ends, the jugular vein need not be ligated. This was the treatment in two cases.

J. S. Fraser.

Radium in Diseases of the Ear.—T. J. Harris. "Annals of Otology," xxvii, p. 986.

The author is forced to conclude that radium, up to the present time, has failed to be of any considerable benefit in the treatment of diseases of the ear. In chronic deafness it is virtually a failure. In rare cases of intractable tinnitus and excessive vertigo it can be employed "with a reasonable hope of relief" by its power of destroying the labyrinth. In superficially seated malignant growths it is valuable, but of no use if they are deep. A further investigation, however, is advised by other observers in order that radium may be tried exhaustively. [Papers of this kind cannot be too widely promulgated, in order that patients may be warned against the many unscrupulous aural quacks who are making real or pretended use of radium.]

Macleod Yearsley.

MOUTH.

Macroglossia Lymphangioma with Report of Case.—Sleight and Haughey. "The Laryngoscope."

Sleight and Haughey give the case of a female, aged six. Teeth badly decayed and foul. No history of tuberculosis or syphilis. When six months of age the patient had the frænum linguae clipped. Following this her family noticed that her tongue enlarged, and seemed to have a growth on it. This condition has been present ever since. *Examination:* The tongue protruded from the mouth about an inch, and could not be returned. The whole surface was covered with vesicles from the most minute to the size of a small pea. Many were of a purplish colour, appeared distended, and ruptured at the slightest provocation, filling the mouth with bloody serum. The parents said the tongue had been in similar condition a number of times, but always got better in about a week. The child was placed on ergot internally, with cold boracic packs to the tongue and cleansing of the mouth and teeth. After four days the tongue had returned to the mouth, was soft to the touch, and was nearly normal in size. The pathologist's report on a piece removed from the tongue was "macroglossia lymphangioma simplex cystica congenital." There was a new formation of connective tissue with lymph-spaces of irregular and racemose shape scattered all through.

Several of the recorded cases have been associated with congenital hygroma in the neck, or lymphangiectasis in the floor of the mouth. The analogy to elephantiasis still seems the most likely explanation.

Treatment.—Butlin recommended wedge-shaped incisions. Recurrence must be ascribed to insufficient removal. The line of incision should, if possible, run through healthy muscular substance.

J. S. Fraser.

BRONCHI AND ŒSOPHAGUS.

Band of a Gold Crown in the Bronchus.—Chevalier Jackson and William H. Spencer. "Dental Cosmos," October, 1918.

Case of a man with history of aspirating the band of a gold crown which had slipped from the hand of his dentist. Later in day had

severe attack of coughing and expectorated a small amount of blood. X ray showed foreign body in right main bronchus. Attempt made to remove it by oral bronchoscopy in sitting position. Foreign body slipped from forceps and fell into left bronchus. Operation lasted six hours. Great swelling of neck and tongue followed with rise of temperature to 101.8° F. Referred to Dr. Jackson.

State on admission: Tongue swollen, pharynx injected, intense laryngitis with exudate and granulation tissue. Expansion of left side of chest impaired. Percussion note impaired in upper right and lower left front. Breath-sounds blowing in right front and left axilla. X ray showed foreign body in bifurcation of lower branch of left bronchus. Evidence of consolidation of right lower lobe. Per-oral bronchoscopy under local anaesthesia. Copious exudate with some granulations in trachea. Band imbedded in left lower lobe bronchus. Removed in 1 min. 49 sec. No after-discomfort. Uneventful recovery.

J. K. Milne Dickie.

Copper Brad in the Left Inferior Bronchus.—McKinney. "The Laryngoscope," February, 1918, p. 89.

McKinney reports the case of a female, aged five, who, four weeks prior to her visit, had inspired into the trachea a copper brad from an old suit-case. For several days subsequently she had cough and some fever. A radiograph showed the brad just at the bifurcation of the trachea. Ether anaesthesia was used. The bronchoscope was passed to the carina and a short distance down both the right and left bronchi without revealing the brad. In the afternoon the temperature went to 101 F., and marked symptoms of acidosis set in with protracted vomiting. This condition was treated with a 5 per cent. soda solution, administered continuously by Murphy drip, and she was given soda-water to drink. In the second radiogram the brad was shown to be lodged in the left main bronchus. At a second attempt two weeks later, under chloroform, it was decided to guide the end of the tube and forceps fluoroscopically. The brad, however, slipped away, so after several failures attempts were given up. At the third sitting the brad was found covered with granulations. Using the Jackson long alligator forceps, McKinney successfully "kicked the brad over," caught it by its edge, and rapidly withdrawing tube, forceps and brad together, pulled the foreign body up into the trachea, where it became dislodged from the beak of the forceps but with a slight cough was expectorated. Recovery.

J. S. Fraser.

Foreign Bodies in the Bronchi and Œsophagus.—Ellen J. Patterson. "Pennsylvania Med. Journ.," April, 1918.

The writer reports twenty-two cases of foreign bodies in the bronchi or Œsophagus. Some of the cases are of considerable interest. The principal point brought out in the paper is that in most cases anaesthesia, whether local or general, is not necessary, and can be dispensed with. In practised hands, also, the duration of the operation may last only some seconds, and no unpleasant after-effects are to be attributed to the absence of anaesthesia. On the contrary, the patient is spared the after-effects of what may be a lengthy narcosis. The patients in this series varied in age from twelve months to eighty-five years. In the only fatal case, a child of two and a-half years had inspired a bean thirty-six hours previously, and was admitted to hospital with deep cyanosis—temperature 102.8° F., pulse 200, respirations 70. Tracheotomy was performed, but

failed to relieve dyspnoea. No time for radiograph. The mucosa of the trachea was found to be so swollen that a 4 mm., bronchoscope could not be passed. Similar cases had been previously noted where the trachea and bronchi were very much swollen and the smaller bronchi completely occluded. This is fortunately rare.

J. K. Milne Dickie.

Report of a Case of Co-existent Carcinoma, Tuberculosis, and Syphilis of the Œsophagus.—L. W. Dean and J. B. Gregg (Iowa City). "Trans. Amer. Laryn., Rhin., and Otol. Soc.," 1917, University of Iowa Monographs, vol. i, No. 3.

The writers discuss carcinoma, syphilis and tuberculosis of the œsophagus, and their co-existence in this organ. They report a very unusual case. From their analysis of the literature of the subject it appears that the co-existence of tuberculosis and carcinoma is more frequent than supposed. The probable sequence of events appears to be the development of a primary carcinoma which becomes secondarily infected with tuberculosis in a phthisical patient. Two or three cases of co-existence of cancer, tuberculosis and syphilis of larynx have been noted.

The case reported by the writers is that of a man, aged sixty, with history of difficulty in swallowing, weakness and cough. Twenty-eight years before had had dysphagia, which began suddenly and ended suddenly five weeks later. For about four months had increasing difficulty in swallowing, frequent choking and coughing. No blood. Lot of slimy mucus. Had lost 50 lb. in weight. Examination of lungs showed tuberculosis of both apices. Throat showed copious mucus in lower pharynx and larynx. On swallowing fluids he coughed and choked. No fluid heard entering stomach. Radiogram showed S-shaped stricture of œsophagus. Stricture began at lower edge of cricoid. Œsophagoscope showed nodular mass $1\frac{1}{2}$ in. below cricoid. Piece removed. Report: Connective tissue and muscle invaded by numerous masses of epithelial cells of squamous type with cornified whorl-formation. Considerable round-celled inflammatory infiltration. Other bits of tissue contained distinct tubercles with giant-cells and caseation. Some tubercle bacilli found. Wassermann positive. Tubercle bacilli found in sputum.

Put on antiluetic treatment and improved markedly in a month. Microscopic examination demonstrated both carcinoma and tuberculosis. Positive Wassermann and improvement under treatment suggested syphilis.

J. K. Milne Dickie.

MISCELLANEOUS.

Tic Douloureux Treated by the Avulsion Method of Laplace.—Holbrook Curtis. "Laryngoscope," December, 1917, p. 891.

Curtis records the following case: Female, aged sixty-one, first suffered from pain in the supra-orbital branch of the trigeminus seven years ago. Later the intra-orbital branch became affected, but never the inferior maxillary. For days the patient had to go without food or drink because the contact of a tumbler or opening the mouth brought on a paroxysm of such frightful pain that she was absolutely unable to endure it. Curtis had therefore to introduce a small catheter through the nose and inject a pint of milk into the stomach. In May, 1915, alcoholic injections were made in the region of the Gasserian ganglion. These did no good, and a removal of the ganglion was contemplated. Curtis, how-

ever, placed the patient under the care of Laplace, whose method of operating he describes as follows: The supra-ciliary ridge and the superior maxillary region were cleansed and painted with iodine. A crescentic incision was made just below the border of the orbit, and the infra-orbital nerve was exposed at the exit from the infra-orbital foramen and freed, in order to allow a long-bladed hemostatic forceps to pick it up. After engaging the nerve and freeing it from the artery, the forceps was firmly held and rotated in the manner of a corkscrew from left to right. After one complete rotation, very slowly made, the minute branches of the nerve could be seen as a white filamentous tree on the upper lip and region of the alae of the nose, the face being very congested from the anæsthetic. One or two minutes were allowed to elapse between every slow rotation of the forceps, and the nerve wound round the instrument from the central and distal extremities. About four and a half revolutions of the forceps were necessary before the nerve was wrapped on the forceps, freed in its entirety. Dr. Laplace then unwound the nerve under water in a glass dish, and laid it out on a dark background to be sure that every filament was intact. The evulsion of the superior orbital branch was carried out in the same manner. The incisions healed in a few days. Since the operation the patient has not had a twinge of pain in her face, and has gained 20 lb. in weight.

J. S. Fraser.

A Sociologic and Medical Study of 400 Cigar Workers in Philadelphia.

—**T. G. Miller** (Philadelphia). "*Amer. Journ. Med. Sci.*," February, 1918.

This paper includes a review of the literature and a detailed study of the employees in twenty-five of the larger cigar factories in Philadelphia, the investigation being undertaken at the instance of the Industrial Board of the Pennsylvania State Department of Labour and Industry, in order to decide whether or not children under sixteen years of age should be allowed to work in the banding and packing rooms of cigar factories. The literature upon the effects of working in tobacco favours the view that it predisposes the worker to pulmonary tuberculosis, gastro-intestinal disturbances, anæmia, genital abnormalities and nervous conditions. The author's investigations, however, lent no support to these contentions, although he did find some wearing of the teeth and some pharyngeal and conjunctival congestion, which he believed to be dependent on faulty personal and factory hygiene.

Thomas Guthrie.

Persistent Thymus in Exophthalmic Goitre.—**A. H. Tebbutt.** "*Med. Journ. of Australia*," November 23, 1918.

A woman, aged twenty-two, had right lobe of thyroid gland removed for relief of well-marked symptoms of Graves's disease. Twelve hours later she became cyanosed, and artificial respiration failed to restore her. Autopsy: Persistent thymus of unusual size. Tebbutt offers conjectures as to cause of death. Was it due—(1) to tracheo-stenosis from pressure, (2) hyperthyroidism, (3) status lymphaticus. He does not attempt to solve the problem.

A. J. Brady.

LISTS OF ORIGINAL PAPERS.

Acad. de Méd., April 16, 1918. (Abstracted by J. K. MILNE DICKIE.)

MAHN, M.—"The Rapid Cure of Mastoid Operations by the Carrel Method."

Amer. Journ. Med. Sci., November, 1918. (Abstracted by THOMAS GUTHRIE.)

BLUM, SANFORD.—"Focal Infections in Childhood."

Amer. Journ. Med. Sci., February, 1918. (Abstracted by THOMAS GUTHRIE.)

MILLER, T. G. (Philadelphia).—"A Sociologic and Medical Study of 400 Cigar Workers in Philadelphia."

Amer. Journ. of Röntgenology, August, 1917, University of Iowa Monographs, vol. i, No. 3. (Abstracted by J. K. MILNE DICKIE.)

PRENTISS, H. J.—"Röntgenological Interpretation of Accessory Sinus Variations."

Annals of Otology, Rhinology, and Laryngology, vol. xxvii, No. 4. (Abstracted by MACLEOD YEARSLEY.)

BECK, C. F. "Surgical Pathology of the Mastoid," p. 869.

CULBERT, W. L.—LXI. "Multiple Osteoma of the Nasal Accessory Sinuses," p. 1203.

IVY, R. H.—LXII. "Case of Plastic Repair of the Ala of the Nose by means of Doubly Epithelialised Flap from Face," p. 1225.

IGLAUER, S.—LXIII. "Some Original Methods of Treatment of Laryngeal Stenosis," p. 1233.

BARNHILL, V. F.—LXIV. "Report of a Case of Osteoma of the Frontal Sinus of Large Size: Operation: Recovery," p. 1239.

HARRIS, T. J.—LXV. "Report of a Case of Meningitis Following Operation upon the Middle Turbinate, with Autopsy Findings Showing an Old Perforation of the Cribriform Plate of the Ethmoid," p. 1241.

EMERSON, F. P.—LXVI. "Changing Methods and Advances in the Treatment of Progressive Deafness Following Chronic Hyperplastic Otitis Media," p. 1250.

HOPKINS, F. E.—LXVII. "Cesophageal Obstruction due to Accessory Thyroid," p. 1258.

ORTON, H. B.—LXVIII. "Local Anæsthesia in Mastoid Operations," p. 1261.

DAVIS, J. L.—LXIX. "Diseased Faucial Tonsils: Their Toxic, Infectious and Reflex Effects," p. 1265.

MOURE, E. J.—LXX. "Contribution to the Study of Rhinoplasty," p. 1272.

MOURE, E. J.—LXXI. "Wounds of the Face and Maxillary Bones," p. 1282.

Both these papers require to be read *in extenso* and in connection with the illustrations.

CABOCHE, H.—LXXII. "Treatment of the Most Common Mutilations of the Nasal Tip Structures, Caused by War Traumatism," p. 1298.

POXT.—LXXIII. "Rhinoplasty and Nasal Prosthesis," p. 1320.

PIETRI, P.—LXXIV. "Absolute Repose of the Jaws as a Treatment for Traumatic Parotid Salivary Fistule," p. 1333.

CANUYT, G., and J. ROZIER.—LXXV. "Local Anæsthesia: Its

Technique in Surgical Interventions on the Frontal and Maxillary Sinuses." p. 1348.

DIEULAUFÉ, L.—LXXVI. "Salivary Fistule," p. 1372.

Arch. Ital. di Otol., vol. xxix, No. 3, September, 1918. (Abstracted by J. K. MILNE DICKIE.)

CALDERA, C.—"Contribution to the Study of the Physiology of the Eustachian Tube."

Brit. Journ. of Surg., vol. vi, No. 24, April, 1919. (Abstracted by J. K. MILNE DICKIE.)

PRINGLE, J. HOGARTH, and J. H. TEACHER.—"Digestion of the Esophagus as a Cause of Post-operative Hæmatemesis."

Dental Cosmos, October, 1918. (Abstracted by J. K. MILNE DICKIE.)

JACKSON, CHEVALIER, and WILLIAM H. SPENCER.—"Band of a Gold Crown in the Bronchus."

Journ. Amer. Med. Assoc., April 26, 1919. (Abstracted by J. K. MILNE DICKIE.)

LILLIE, H. I., and H. R. LYONS.—"Tonsillectomy in Myositis and Arthritis."

Journ. Amer. Med. Assoc., May 3, 1919. (Abstracted by J. K. MILNE DICKIE.)

ALLPORT, F., and B. WILSON.—"Report of a Case of Steel in the Larynx."

Med. Journ. of Australia, November 23, 1918. (Abstracted by A. J. BRADY.)

TEBBUTT, A. H.—"Persistent Thymus in Exophthalmic Goitre."

Med. Times, April, 1918. (Abstracted by J. K. MILNE DICKIE.)

WRIGHT, JOHN D.—"Sound Perception in Deaf-mutes."

Pennsylvania Med. Journ., April, 1918. (Abstracted by J. K. MILNE DICKIE.)

PATTERSON, ELLEN J.—"Foreign Bodies in the Bronchi and Esophagus."

Proc. Roy. Soc. Med., Section of Electro-Therapeutics, July, 1918. (Abstracted by ARCHER RYLAND.)

CUMBERBATCH, E. P.—"Surgical Diathermy," p. 115.

Proc. Roy. Soc. Med., July, 1918, Section of Odontology. (Abstracted by ARCHER RYLAND.)

THOMSON, SIR STCLAIR.—"Tooth Impacted in a Secondary Bronchus of the Left Lung: Removal by Tracheotomy and Lower Bronchoscopy after Two Unsuccessful Attempts by Upper Bronchoscopy," p. 100.

Revue de Laryngologie, March 31, 1919. (Abstracted by J. K. MILNE DICKIE.)

GRIVOT and GOT.—"Quelques considérations cliniques sur les effets des nouveaux gaz toxiques allemands au niveau des muqueuses des voies respiratoires supérieures."

THOLLON et LABERNADIE.—"Note sur les lésions pharyngo-laryngées consécutives à l'action d'un gaz toxique et leur traitement."

MOURE, E. G.—"Sur un cas de plaie du cou et de la trachée par échet d'obus."

Revue de Laryngologie, April 15, 1919. (Abstracted by J. K. MILNE DICKIE.)

FOURNIER, G.—"A propos d'un cas de fistule congénitale de l'oreille."

VERNET, MAURICE.—"Syndrome du trou déchiré postérieur avec paralysies du facial et du moteur oculaire externe par fracture du crâne."

Revue de Laryngologie, April 30, 1919. (Abstracted by J. K. MILNE DICKIE.)

ROZIER, J.—"Dentier inclus dans la trachée depuis quatre mois enlevé grâce à la trachéo-bronchoscopie."

FOURNIOUX, ALBERT.—"Abscess Cérébral d'origine otitique avec méningite puriforme aseptique sans lésions intermédiaires osseuses ou dures-mériennes. Opération. Guérison."

Surg., Gyn. and Obstet., March, 1919. (Abstracted by J. K. MILNE DICKIE.)

JACKSON, CHEVALIER.—"Observations on the Pathology of Foreign Bodies in the Air- and Food-passages: Based on the Analysis of 628 Cases."

The Lancet, vol. i, 1919. (Abstracted by MACLEOD YEARSLEY.)

ROLLESTON, Sir H.—"Cerebro-spinal Fever," No. 4988, p. 541; No. 4989, p. 593; No. 4990, p. 645.

The Laryngoscope. (Abstracted by J. S. FRASER.)

SLEIGHT and HAUGHEY.—"Macroglossia Lymphangioma with Report of Case."

The Laryngoscope, vol. xxvii, December, 1917. (Abstracted by J. S. FRASER.)

CURTIS, HOLBROOK.—"Tic Douloureux Treated by the Avulsion Method of Laplace."

The Laryngoscope, vol. xxviii, January, 1918. (Abstracted by J. S. FRASER.)

SCRIPTURE, Mrs. MAY KIRK.—"The Aetiology of Speech Defects," p. 12.

The Laryngoscope, vol. xxviii, February, 1918. (Abstracted by J. S. FRASER.)

McKINNEY.—"Copper Brad in the Left Inferior Bronchus," p. 89.

The Laryngoscope, vol. xxviii, March, 1918. (Abstracted by J. S. FRASER.)

BECK.—"Treatment of Malignant Disease of the Larynx," p. 131.

SMITH, HARMON.—"Syphilis of the Epiglottis," p. 175.

The Laryngoscope, vol. xxviii, May, 1918. (Abstracted by J. S. FRASER.)

STEIN, OTTO J.—"Decompression Operation on the Hypophysis by the Nasal Route," p. 376.

GLOGAU, OTTO.—"The Vaccine Treatment of Ozæna," p. 380.

The Laryngoscope, vol. xxviii, June, 1918. (Abstracted by J. S. FRASER.)

BALLON, D. H.—"Lateral Sinus Thrombosis: Three Cases," p. 464.

JONES, ISAAC H.—"An Attempt at Simplification of the Physiology of the Vestibular Labyrinth," p. 473.

WRIGHT, J. D.—"The Deaf: Their Education; Improvement of Conditions; Responsibilities and Participation of the Profession," p. 497.

The Laryngoscope, vol. xxviii, July, 1918. (Abstracted by J. S. FRASER.)

RICHARDSON, CHARLES W.—"Ear Protectors," p. 514.

BABCOCK, J. W.—"Bacteriological and Clinical Aspects of Infection of the Accessory Sinuses," p. 527.

KERRISON, PHILIP D.—"Chronic Middle-Ear Suppuration: Radical Mastoid Operation: treated by the Carrel-Dakin Method," p. 537.

POLLOCK, HARRY L.—"Asthma from a Wider Aspect," p. 543.

GALLAHER, THOMAS J.—"Trichloroacetic Acid in Vincent's Angina," p. 551.

The Laryngoscope, vol. xxviii, August, 1918. (Abstracted by J. S. FRASER.)

WHITE, E. LEON.—"An Operation for Bony Occlusion of the Posterior Nares," p. 571.

MORGENSTERN.—"The Medical Profession and the Deaf," p. 612.

TEAL, FREDERICK F.—"A New Ear Test for Malingering," p. 615.

GATEWOOD.—"Perineural Anesthesia for Radical Surgery of the Maxillary Sinus," p. 616.

The Laryngoscope, vol. xxviii, September, 1918. (Abstracted by J. S. FRASER.)

LYNAH.—"Stenosis of the Larynx and Trachea following Diphtheria," p. 629.

KERRISON.—"Tests for Malingering," p. 662.

STAUFFER.—"Diseases and Deformities of the Nose *versus* Neuralgia of the Head," p. 698.

The Laryngoscope, vol. xxviii, October, 1918. (Abstracted by J. S. FRASER.)

DENCH, EDWARD B.—"Chronic Suppurative Otitis Media and Exemption from Military Service," p. 717.

FISHER, LEWIS.—"The Bárány Tests in Pathologic Cases," p. 724.

SCRIPTURE, MRS. MAY KIRK.—"Phonetics in Relation to Speech Defects," p. 735.

SHOOK, FRANCIS M.—"Submucous Resection of the Nasal Septum," p. 750.

HURD, LEE M.—"Adeno-Carcinoma of the Nose," p. 757.

CATES, THOMAS H.—"The Surgical Treatment of Peritonsillar Abscess," p. 764.

The Laryngoscope, vol. xxviii, November, 1918. (Abstracted by J. S. FRASER.)

FREUDENTHAL, WOLFF.—"The Pathogenesis of Bronchial Asthma," p. 781.

GRAEF, CHARLES.—"Tests of Labyrinthine Function," p. 811.

SCRIPTURE, MRS. MAY KIRK.—"Therapy of Speech Defects," p. 817.

KEY, SAM.—"An Elongated Styloid Process," p. 849.

HUBBARD, THOMAS.—"A Manikin for Practice of Bronchoscopy and Esophagoscopy," p. 851.

The Laryngoscope, vol. xxviii, December, 1918. (Abstracted by J. S. FRASER.)

SCHEPPEGRELL, WILLIAM (New Orleans).—"Anaphylaxis Due to

Pollen Protein, with a Report of the Results of Treatment in the Hay-fever Clinic of the New Orleans Charity Hospital," p. 853.

SCHAEFFER, C. W. (Philadelphia).—"The Municipal Control of Diphtheria," p. 861.

LEVBAR, JOHN J. (New York).—"Intubation for Angioma of the Larynx in a Child of Ten Weeks Old," p. 867.

SWIFT, W. B. (Boston).—"The Training of the Speech Instructor," p. 869.

GRAHAM, H. B. (San Francisco).—"Osteo-sclerosis of the Temporal Bone in Chronic Suppuration," p. 872.

KAHN, A. (New York).—"Outlines of a New Instrument to be Used in Skin Grafting in the Radical Mastoid Cavity," p. 875.

This article is illustrated and must be read in the original.

The Laryngoscope, vol. xxix, February, 1919. (Abstracted by J. S. FRASER.)

LEWIS, E. R., and HENRY HORN.—"Medical Studies on the 'Feel of the Airship,' Deaf-mutes and Normals," p. 65.

CUTLER, F. E. (New York City).—"Injuries of the Auditory Canal Resulting from Projectiles, with Special Reference to the Separation of the Cartilaginous from the Bony Canal," p. 82.

THOMSON, SIR STCLAIRE (London, England).—"On the Occasional Preference of a Tracheotomic Bronchoscopy to the Per-oral Route," p. 88.

STICKNEY, O. D. (Atlantic City).—"Report of a Case of Bilateral Acute Suppurative Otitis Media with Symptoms of Sinus Thrombosis," p. 90.

BAUM, H. L. (Denver).—"A New Instrument for Tonsillectomy," p. 96.

JONES, CHARLES C. (Cincinnati).—"Report of a Case of Fatal Epistaxis Following Varicella," p. 101.

LAESSELE, H. A. (Philadelphia).—"Nasal and Pharyngeal Sequelae of Influenza," p. 103.

MURPHY, J. W. (Cincinnati).—"Report of Removal of Foreign Bodies from the Bronchi and Oesophagus," p. 106.

This article does not lend itself to abstract.

JACKSON, CHEVALIER (Philadelphia).—Editorial Department, p. 110.

Trans. Amer. Laryn., Rhin. and Otol. Soc., 1917, University of Iowa Monographs, vol. i, No. 3. (Abstracted by J. K. MILNE DICKIE.)

DEAN, L. W., and J. B. GREGG (Iowa City).—"Report of a Case of Co-existent Carcinoma, Tuberculosis, and Syphilis of the Oesophagus."

OBITUARY.

DR. CLARENCE JOHN BLAKE.

Boston, U.S.A.

WE regret to announce the death, on January 29 last, of Dr. Clarence John Blake, well known as probably the foremost American otologist of his time.

Born nearly seventy-six years ago, Dr. Blake received his medical education at Harvard Medical School, where he graduated M.D. in 1865.

After studying abroad, and particularly in Vienna, where he received the O.M. Degree, he returned to Boston, and became lecturer at his old medical school, where in 1888 he was made Professor of Otology, a Chair which he occupied with approbation until 1913, when, on resigning the appointment, he was made Emeritus Professor.

From 1879 until 1882 Dr. Blake edited the *American Journal of Otology*, in addition to which he wrote a book on "Operative Otology," together with many articles in medical and other journals on his particular branch of medicine. In the midst of these professional activities he also found time to take a prominent interest in educational and other public work.

Dr. Blake was twice married, and it will be an added sorrow to those who had met Dr. and Mrs. Blake in recent years to learn that she also has recently died.

Prof. Urban Pritchard writes:

"I was deeply grieved to hear of the death of my old friend, Dr. Clarence Blake.

"Like all of us in this country, I had very great respect for him, both on account of his valuable work in otology and for his sterling character.

"His writings are too well known to require any mention by me, but I would like to remind my colleagues of his connection with the invention of the telephone. Dr. Graham Bell consulted him on the physiological aspects of the work, and, when the company was formed to carry out the invention, the directors offered Dr. Blake a valuable post as adviser, but he was far too keenly interested in medicine to give it up for such a post.

"I was always struck by his keenness for work, his conscientiousness, and moreover by his extreme accuracy, so that one could absolutely depend on everything he stated.

"Prof. Clarence Blake was President of the International Otological Congress in Boston, which he made a great success. He was very anxious that these Congresses should continue to flourish, and a few weeks ago I had a letter from him urging the importance of the International Otological Congress re-assembling soon after the war was over.

" URBAN PRITCHARD.

" 55, WIMPOLE STREET ;

" March 7, 1919."

JAMES MACKENZIE BOOTH, M.D.,

Aberdeen.

By the death of Dr. Mackenzie Booth, of Aberdeen, our speciality has lost a worthy representative of the older school, and the general circle of medicine in Scotland has lost a striking and charming personality.

Mackenzie Booth was an Aberdonian, having been born in the granite city in 1855. Here he received his scholastic and medical education, graduating M.A. in 1875, M.B., C.M. in 1877, and M.D. in 1888.

After spending some time in Vienna, he settled down in 1880 in his native city, being made Surgeon to the Ear and Throat Department of the Aberdeen Dispensary. Thereafter he became University Lecturer on Diseases of the Ear, Nose and Throat, but drifted into general surgery as years went on, with the appointments as Surgeon and Lecturer on Clinical Surgery to the Aberdeen Infirmary.

He earned for himself a position in our speciality which secured for him the secretaryship of the Otological Section of the British Medical Association Meeting in Newcastle-on-Tyne in 1892, and until his last

years he remained an oto-laryngologist of distinction and of practical importance.

To those of us who had experienced the animation and enthusiasm of his mind, his death brings almost the same shock of surprise as is aroused when a young colleague is lost, and that we may well regard as the most enviable characteristic of his make-up, its energy and fresh youthfulness.

D. M.

NOTES AND QUERIES.

ERRATA IN JUNE NUMBER.

P. 188, last par., line 3, *for made read* explained.

P. 207, line 2 from bottom, *for Mager read* Mayer.

P. 227, under illustration, *for wire read* was.

THE BELGIAN SOCIETY OF OTOTOLOGY, RHINOLOGY, AND LARYNGOLOGY.

The meeting of the above Society will be held at the Hôpital Sainte-Elisabeth, on July 12 and 13, 1919.

The President is Dr. Trétrap, Avenue van Eyck, 46, Antwerp; the Secretary-General, Dr. Ledoux, Rue Lebeau, 33, Brussels.

We hope that as many British representatives as possible will make an effort to attend the first meeting of our Belgian *confrères* since the war broke out.

BOOKS RECEIVED.

A Vision of the Possible: What the R.A.M.C. might become. By Sir James W. Barrett, C.B., C.M.G., M.D. Price 9s. net.

Le Français. Enseigné par la méthode intuitive et directe. Par P. Dessaignes. Masson et Cie., Editeurs, 120, Boulevard St. Germain, Paris, 1919. Price 5 fr. net.

d atrophy of the left
ico-aryten.-post. muscle.



MICROSCOPICAL APPEARANCE OF MUSCLES

a. Right crico-aryten.-post. normal. *b*. Left ditto with fatty degeneration.

LARYNGOSCOPIC APPEARANCE DURING LIFE.

ANTERIOR.

POSTERIOR.

POST-MORTEM APPEARANCE.

Reproduction of water-colour drawing for Morell Mackenzie
(from Mr. E. Mayer)

THE
JOURNAL OF LARYNGOLOGY,
RHINOLOGY AND OTOTOLOGY.

Original Articles are accepted on the condition that they have not previously been published elsewhere.

If reprints are required it is requested that this be stated when the article is first forwarded to this Journal. Such reprints will be charged to the author.

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THE MORELL MACKENZIE RELICS.

By the kindness of Mr. E. Mayer, of Messrs. Mayer & Phelps, we are able in the present issue of this journal to publish a descriptive list of the Morell Mackenzie relics which have been recently presented by him to the Royal Society of Medicine, and are now, and will remain for all time, on view in the House of the Society.

The list, which appears on p. 278, has been compiled by Dr. Irwin Moore, who has taken great pains to arrive at accuracy, and as he has had the opportunity of collaboration with Dr. James Donelan, President of the Section of Laryngology, whose authority in matters connected with Mackenzie is unquestionable, we may take it that Dr. Irwin Moore's references and statements are historically correct and in every way reliable.

For the care which Mr. Mayer has taken of these valuable and interesting objects during the long years when Mackenzie's reputation was passing through the shadow of disparagement, not only laryngologists but all British medical men must feel deeply grateful, and on behalf of this wide constituency we offer to Mr. Mayer our hearty thanks.

We have also to express to him our indebtedness for the fine reproduction, which appears as a plate in the present issue, of one of the water-colour drawings made for Mackenzie by Lennox Browne, who was an artist of great skill and taste.

It is with gratitude and satisfaction that we welcome to our House these, the last personal remains of the work of the founder of laryngology, and it is right and fitting that this honour should be paid to them, for whatever may have been his mistakes and shortcomings, simple justice compels us to recognise in Morell Mackenzie a far-seeing and enthusiastic pioneer as well as a scientific and precise clinician.

Recent events, both public and private, have united to bring Mackenzie's life and works once more prominently before a generation which only knows him through the tradition of the elders. Many of us have also listened to his traducers, albeit with an ever-growing sense that there was something in the man and in his work which survived, and continues to survive, all the attacks that have been made upon him, both during his life and since his death. Time passes; critics are

talkative; calumniators are not silent; and yet we still go back to Mackenzie's "Diseases of the Throat and Nose" for our statistics, and we use his laryngeal forceps.

Of the vexed question of Mackenzie's treatment of the Crown Prince's laryngeal disease, and of Mackenzie's outspoken criticisms of his German colleagues in that case, this is not the place to speak. Suffice it to say that it would be a little difficult nowadays to compel the resignation of any man from a British Medical College for plain speaking with regard to the practices of German surgeons!

That by the way. What we wish to observe now is that the storms that have been raging around this great man's head are at last being dissipated, and he is once more emerging into view, still worthy of our respect—still worthy, indeed, of our admiration—for, as the years roll on, Time is proving his work to have been both durable and sound.

D. M.

SCIENTIFIC RELICS OF MORELL MACKENZIE.¹

EXHIBITED AT THE FIRST SUMMER CONGRESS OF THE SECTION OF
LARYNGOLOGY AT THE ROYAL SOCIETY OF MEDICINE ON
MAY 2 AND 3, 1919.

PRESENTED BY MR. MAYER (MESSRS. MAYER AND PHELPS)

TO THE ROYAL SOCIETY OF MEDICINE.

MANUSCRIPTS COMPILED BY DR. IRWIN MOORE.

Diagrams prepared by Dr. James Donelan to illustrate a lecture given by Morell Mackenzie before the Philosophical Institute of Edinburgh in December, 1888, on "Speech and Song." One of these diagrams comprises the history of "Pitch," as illustrated by the variations and vibrations of the note A from the time of Mozart.

A comparative scale of different classes of voices, with notes by Morell Mackenzie. This chart was kept in his drawer to refresh his memory when he saw singers. Inscribed in Morell Mackenzie's handwriting (blue pencil): "Not to be taken from the drawer."

Reprints of articles, by Solis-Cohen, from the *American Journal of Medical Sciences*, 1883, pp. 84-93, on "Laryngoscopy as a Means of Diagnosis." Presented to Morell Mackenzie, with the compliments of the author. Marked "Important" in Morell Mackenzie's handwriting.

Twelve water-colour drawings by Lennox Browne, signed and dated (see below).

Morell Mackenzie's interest in the pathology of his speciality is shown by the large number of cases he exhibited at the meetings of the Pathological Society of London between 1862 and 1874 (*vide Transactions*, vols. xiii to xxv).

These cases were invariably worked out with great thoroughness both as regards history and symptoms, and constitute a valuable addition to literature.

The beautiful water-colour drawings by Lennox Browne, presented to the Royal Society by Mr. Mayer, represent the most interesting and important cases which Morell Mackenzie contributed to the Pathological Society of London during this period.

¹ These relics have been placed in a case, and are exhibited in the Library of the Royal Society of Medicine, 1, Wimpole Street, London, W.

1. *Cancerous Ulceration of the Epiglottis, with large Cystic Tumour of the Neck* (shown January 21, 1868). *Trans. Path. Soc. Lond.*, 1868, vol. xix, p. 61.

2. *Cancerous Ulceration of the Larynx* (shown May 5, 1868). *Trans. Path. Soc. Lond.*, 1868, vol. xix, p. 71.

3. *Ulcer of the Oesophagus perforating the Trachea and believed to be Non-cancerous* (shown February 18, 1868). *Trans. Path. Soc. Lond.*, 1868, vol. xix, p. 213.

4. *Cancerous (?) Ulceration of the Larynx, with Partial Obliteration of the Oesophagus* (shown May 5, 1868). *Trans. Path. Soc. Lond.*, 1868, vol. xix, p. 83.

5. *Tracheal Growths Pressing upon the Left Recurrent Laryngeal Nerve, and causing Paralysis and Atrophy of the Abductor of the Left Vocal Cord* (shown May 19, 1868). *Trans. Path. Soc. Lond.*, 1868, vol. xix, p. 84.—[In the title (*Trans. Path. Soc.*), the growths were described as laryngeal. This is evidently a printer's error, since in the letterpress the trachea is referred to as the seat of the growths].

This drawing appears in the present number of the JOURNAL, and the following is the report of the case:¹

The specimen was taken from a female, aged fifty-six, first seen on March 29, 1868, and was exhibited at a Meeting of the Pathological Society of London on May 19, 1868.

Patient complained of extensive dyspnoea and stridulous breathing on the slightest exertion, which had followed a violent croupy cough three years previously. The dyspnoea and stridor ceased when the patient assumed the recumbent posture, and also on going downstairs. During sleep there was not the slightest stridor.

Laryngoscopic examination showed that the left vocal cord was not properly abducted on inspiration, but remained near the median line, presenting a curved free border (*vide fig. in centre of plate*).

No aneurysmal tumour, which might have pressed on the recurrent laryngeal nerve of the side effected, could be discovered.

Since the dyspnoea was very considerable, tracheotomy was performed on April 17, but the patient did not appear to be much relieved by it. Four days later a sudden and most severe paroxysm of dyspnoea came on, patient becoming perfectly livid and slightly convulsed. The paroxysm lasted several hours and was followed by another after an interval of three hours. The attack was considered to be due to asthma.

A week later patient had a recurrence of the asthma, and died the following day at the termination of a severe paroxysm.

Post-mortem examination revealed a number of small tumours, growing outside, and projecting into the cavity of the wind-pipe, midway between the larynx and the bifurcation of the trachea. In one of these, three-quarters of an inch long by a quarter of an inch in breadth, the left recurrent nerve was completely embedded, and as it emerged it was seen to be red and inflamed. The left abductor (crico-arytenoideus posticus) was found to be pale and atrophied. On microscopical examination its fibres were seen to have undergone complete fatty degeneration. No other muscle was unhealthy. The walls of the heart were exceedingly soft and thin, the right auricle so much so that it was accidentally ruptured in removal.

There were altogether four distinct tumours.

Microscopical report of the one in which the nerve was embedded:

"The hard tumour seems to consist of a striped muscular tissue, enveloped in connective-tissue and cells. The muscular fibres are disposed irregularly and vary greatly in size and shape; some at the edge of the preparation are well marked, those placed internally are much more narrow, and so indistinct that it is difficult to recognize their real nature." On the right side, external to the trachea, was a small cystic tumour, made up of epithelial cells, enclosed in enlarged gland-

¹ The notes of this case have been summarised by Dr. Irwin Moore from Morell Mackenzie's original description published in the *Transactions of the Pathological Society of London*, 1868, vol. xix, p. 84.

tubes of various shapes and sizes, the cells presenting no appearance of malignant disease, and the basement membrane being distinct, and in many parts thickened. The tumour did not in any way involve the right recurrent nerve. The fluid contained in it was of a sebaceous character. In addition to these there were two small round growths projecting into the tracheal canal, of a similar nature to the last, but probably older, the glands being less distinctly marked, and more fused together.

Report on specimen of laryngeal growths pressing upon the left recurrent laryngeal nerve, by the Committee on Morbid Growths: "We have examined the tracheal tumour, and beg to report that we agree generally in the description of its microscopical structure; that we found striped muscular fibre in the outer portion of its left lateral division: but that we found none in the interior of the tumour or on the inner surface of any part of it. We believe that the muscular fibres were derived from the muscle in contact with, and partly involved in the outer surface of the growth."

6. *Primary Caries of the Cricoid Cartilage, with Secondary Abscess* (shown March 1, 1870). *Trans. Path. Soc. Lond.*, 1870, vol. xxi, p. 46.

7. *Large Tumour removed from the Posterior Surface of the Cricoid Cartilage* (shown April 5, 1870). *Trans. Path. Soc. Lond.*, 1870, vol. xxi, p. 53.

8. *Aneurysm of the Arch of the Aorta causing Pressure on the Left Recurrent Laryngeal Nerve, with Paralysis and Atrophy of the Muscles of the Left Side of the Larynx* (shown April 19, 1870). *Trans. Path. Soc. Lond.*, 1870, vol. xxi, p. 129.

9. *Constriction of the Trachea, Syphilitic Deposits in the Liver* (shown February 21, 1871). *Trans. Path. Soc. Lond.*, vol. xxii, p. 33.

10. *Varicose Larynx* (John Riley, aged twenty-five), pl. viii, p. 188.—The appearance of the larynx is typical of early tuberculosis, *e.g.* the pallor or anæmia of the epiglottis and arytenoid, loss of lustre, and passive congestion of the left cord.

11. *Tubercular Ulceration of the Right Vocal Cord*.—Case of Benjamin White (No. 1, pl. v).

12. *Tubercular Ulceration of the Posterior Half of the Left Vocal Cord with Papillary Infiltration of the Interarytenoid Region*.—Case of George Tomkins (No. 2, pl. v).

The cases from which these three views of the larynx were taken have not been recorded in the *Transactions of the Pathological Society* or any other publication, and are presumably cases from Morell Mackenzie's private practice.

13. *Syphilitic Leucoplakia*.—From a male patient, pl. vi, p. 139. P.Bk. (evidently stands for private book), is presumably another case from Morell Mackenzie's private practice.

It is hoped to reproduce these drawings in this JOURNAL at a later date, along with reports of the cases.

One of the tracheotomy tubes made by Messrs. Mayer and Meltzer for the Crown Prince of Germany in February, 1888.

Original telegram mounted between glass from Morell Mackenzie to Messrs. Mayer and Meltzer, ordering a very large-sized Durham's tracheotomy tube for the Crown Prince of Germany. Dated San Remo, February 8, 1888.

Manuscript.—The case of the German Crown Prince, and its treatment by Sir Morell Mackenzie. By Dr. Wilhelm Meyer and Dr. Holger Meigend. Dated November 20, 1887. This was written in reply to the attacks in the German Press on Morell Mackenzie.

Manuscript of portion of "Manual of Diseases of the Throat and Nose." Index of "The Trachea," pp. 581-601 of vol. ii. Page 55 missing. In Morell Mackenzie's own handwriting.

Manuscripts dictated by Morell Mackenzie and in the handwriting of his

secretary, Mr. Nainby, probably intended for the second edition of the "Manual":—

1. Nasal Catarrh.
2. Purulent Nasal Catarrh.
3. Chronic Rhinitis and Ozena.
4. Syphilitic Affections of the Nasal Cavities.
5. Lupus of the Pituuitary Membrane.
6. Glanders.
7. Foreign Bodies in the Nasal Cavity.
8. Nasal Calculi (Rhinoliths).
9. Nasal Neuroses (Anæmia, etc.).
10. Glandular Diseases of the Naso-Pharyngeal Mucous Membrane.
11. Fractures of the Larynx.

It is hoped to publish these articles at a later date in this JOURNAL.

A portion of the manuscript of a lecture on "Goitre" (two pages missing), delivered at the London Hospital. No date.

Galley proof of chapters on "Goitre," with pencil notes by Dr. James Donelan. Pages 7 to 35 (pages 1 to 6 missing, dealing with the history of goitre). These were to have been published as part of the section of "Diseases of the Neck," vol. iii. Referred to by Dr. James Donelan¹ in his Presidential Address to the Section of Laryngology, Royal Society of Medicine, Session 1918-19. Also in his article on "Morell Mackenzie, the Father of British Laryngology," in the JOURNAL OF LARYNGOLOGY, RHINOLOGY AND OTOTOLOGY.²

Manuscript book, McClelland on "Goitre." These are notes from the *British and Foreign Medical Review*, 1839, vol. viii, pp. 103 *et seq.*

Manuscript book containing 26 letters from various medical men, written in reply to inquiries sent by Morell Mackenzie as to the question of the endemology of goitre.

Manuscripts (various) relating to the trachea and œsophagus, in loose brown paper cover, inscribed "Holmes" in brackets. These were dictated by Morell Mackenzie to his assistant, Dr. Gordon Holmes.

Manuscripts, "Malformation of the Œsophagus," inscribed "50 pounder." These are written notes on congenital malformations of the œsophagus, trachea and larynx, arranged in chronological order from 1813 to 1880.

"Clinical History of a Case of Labio-glosso-laryngeal Paralysis," in Mackenzie's own handwriting. These notes are remarkable for the minute details of the symptoms observed.

Book of "Form Letters" for use of Secretary.

Rough notes of cases. Dr. Donelan says Mackenzie made these when called to visit patients.

"Description of Triangular Bandage," by Acting Surgeon R. R. Sleeman, 20th Middlesex (Artists'), R.V. Dated November 6, 1890, and addressed, "Surgeon Sir M. Mackenzie." Morell Mackenzie was at this time in the Volunteers. This was the date of the original introduction of the triangular bandage.

Six photographs of Larynx, inscribed, "To Sir Morell Mackenzie with compliments of T. R. French, M.D., Brooklyn, Jan. 11th, 1890."

Three photographs of Goitre cases, with notes attached.

Book of photographs of cases in which tracheotomy had been performed for croup and papilloma of the larynx and one case of extirpation of the larynx. Presented to Sir Morell Mackenzie by E. S. Cassanello de Montevideo.

A bound volume of pamphlets entitled "Rhinoscopy," by various authors, some with notes affixed in Morell Mackenzie's handwriting. Also one inscribed with his signature.

"The Use of the Laryngoscope in the Diseases of the Throat," with the appendix on "Rhinoscopy," by Morell Mackenzie. Second edition, 1866, inscribed. "Mr. Mayer, with the Author's compliments," in Morell Mackenzie's handwriting.

Two empty drawing or manuscript portfolios.

Ten original electrodes which were used to illustrate various instruments in the "Manual of Diseases of the Throat and Nose."

¹ "British Laryngology and Rhinology," *Proc. Roy. Soc. Med.*, 1918, vol. xii (Sect. Laryngol.), p. 4.

² *JOURN. OF LARYNGOL., RHINOL., AND OTOL.*, 1919, vol. xxxiv, p. 183.

LARYNGEAL AND NASAL INSTRUMENTS FORMERLY IN THE POSSESSION OF,
OR DESIGNED BY MORELL MACKENZIE.

Amongst these instruments¹ the following deserve special notice:

Œsophagoscope (fig. 3, vol. ii, p. 16).—Morell Mackenzie was one of the earliest pioneers of œsophagoscopy, and was the first to actually look into the œsophagus by the direct method.

Following the first attempts to examine the œsophagus by Semeleler and Stoeck in 1866 and Waldenburg in 1868, Mackenzie made his first attempt in November, 1880, by means of an instrument which he himself invented.

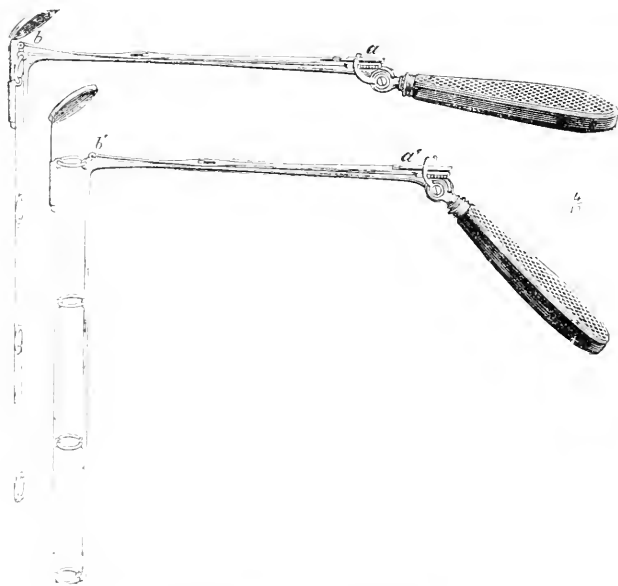


FIG. 1.—Morell Mackenzie's œsophagoscope.

This instrument was altogether different from any previously employed, and consisted of a skeleton tube or speculum made up of rings which could be closed for easy insertion into the œsophagus and opened when in position. In the upper portion of this tube a laryngeal mirror was attached. There are three different length stems, consisting of four, three and two rings respectively, which can be attached to the handle. Mackenzie² tells us that during the ten months following his first trial he used this œsophagoscope on fifty patients, and succeeded in thirty-seven cases in inspecting the upper part of the œsophagus. Subsequently he employed it whenever a suitable case presented itself.

During later years the advent of electric light gave fresh impetus to other workers in this field, resulting in the natural evolution of the present-day endoscopic tube from the urethroscope of Desormeaux and Cruise.

¹ The figures (in brackets) after each instrument refers to the "Manual of Diseases of the Throat and Nose."

² "Manual of Diseases of Throat and Nose," 1884, vol. ii, p. 16.



FIG. 2.—
Mackenzie's
permanent
oesophageal
feeding-
tube.

(Oesophageal Electrode.—This instrument is similar to the laryngeal electrode designed by Mackenzie, but is 26 cm. in length below the handle.

Mackenzie's Permanent (Oesophageal Tube.—This consisted of a fine gum-elastic tube about 6 in. in length to which two strings were attached. It was inserted by means of a vulcanite or whalebone stem.

Mackenzie used this feeding-tube with great success in many cases of oesophageal stricture. It seems, indeed, to have been the first oesophageal feeding-tube ever devised.

Mackenzie's Double Guillotine or Tonsillotome (fig. 6, vol. i, p. 12).—This instrument was designed by Mackenzie, and consisted of a pair of his tonsil guillotines attached together for the simultaneous excision of both tonsils, but he only occasionally used the instrument and it soon became obsolete.

Mackenzie's Nasal Ecraseur (fig. 59, vol. ii, p. 272).—This was designed for the removal of the more fibrous varieties of polypi, and is still employed by some operators. The wire is wound round a cogwheeled reel worked by a lever. It is cleverly designed and a very useful instrument.

Mackenzie's Nasal Polypus Snare (fig. 57, vol. ii, p. 270).

Mackenzie's Nasal Bone Forceps (fig. 55, vol. ii, p. 268).—This instrument combined the grasping power of ordinary forceps with a cutting blade, and was used for the removal of portions of the turbinal bones and nasal exostoses. When the instrument was in position, a sliding chisel fixed to the forceps was projected forward. The instrument is now obsolete.

Nasal Punch Forceps for Polypi (fig. 51, vol. ii, p. 266).—These were used for seizing and evulsion or cutting through a growth.

Nasal Ring Knife for Bony Spurs.

Four Nasal Bougies (vol. ii, p. 254).—These were made of gum-elastic, from 3 to 4 in. in length.

Laryngeal Reflector Mounted on Spectacle Frame (fig. 13, vol. i, p. 218).

Mackenzie's Laryngeal Electrode (fig. 40, vol. i, p. 252).—For the direct application of electricity to the vocal cord. Mackenzie occasionally employed this.

Mackenzie's Guarded Wheel Ecraseur (fig. 49, vol. i, p. 260).—This was employed for the removal of very large growths of the larynx, and consisted of a solid metal loop in which was concealed a snare wire worked by a cog-wheel attached to the handle. It was a serviceable instrument, for the wire could easily be made to surround the growth. (See Fig 3.)

Mackenzie's Laryngeal Tube Forceps (fig. 46, vol. i, p. 257).—These forceps were made with various shaped blades, both perpendicular and horizontal. The blades are the original patterns of those now in use in the direct forceps, *i.e.* the bean forceps, the needle forceps, and the punch forceps of Killian, Brunings, etc.

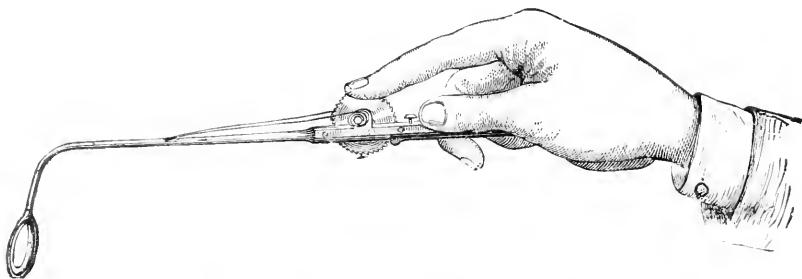


FIG. 3.—Mackenzie's guarded wheel ceraseur.

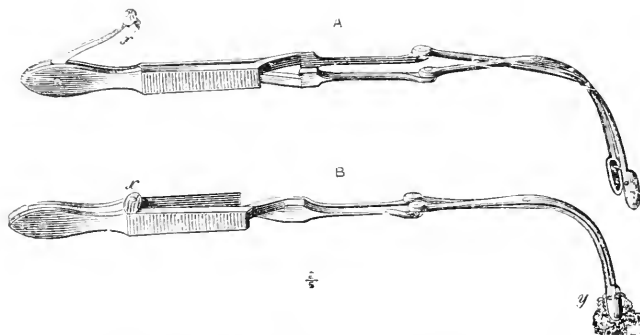


FIG. 4.—Mackenzie's laryngeal sponge holder with safety catch.

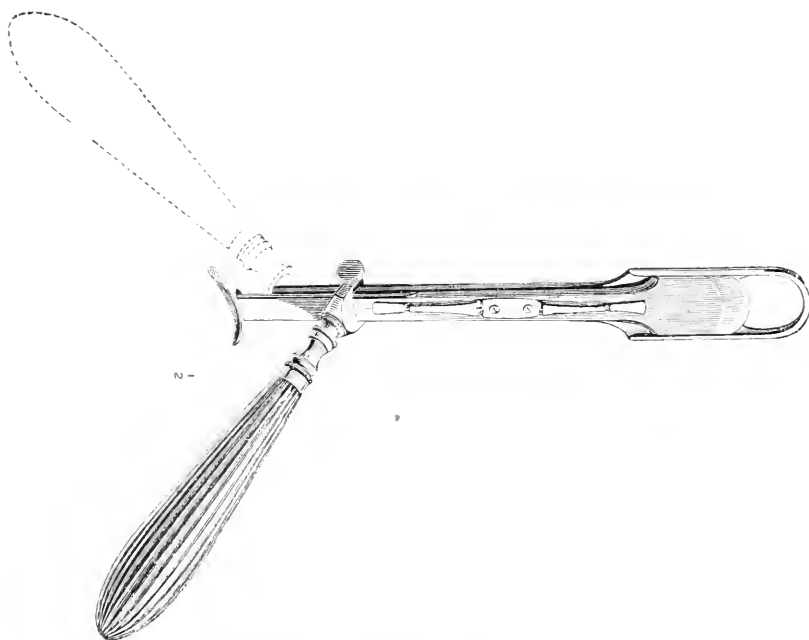


FIG. 5.—Mackenzie's reversible tonsil guillotine.

Mackenzie's Laryngeal Sponge Holder with Safety Catch (fig. 29, vol. i, p. 245).—For applying solutions to the larynx, with a safety arrangement for fixing the blades immovably together.

Mackenzie's Laryngeal Cutting Forceps (fig. 43, vol. i, p. 254).—This is an early pattern of the laryngeal forceps designed by Mackenzie, which is universally used throughout the world at the present day for the removal of benign growths from the larynx by the indirect method. He designed a later pattern, larger and heavier, so as to obtain a better balance.

Croup Brush or Sponge Holder.—Morell Mackenzie used to tie a small sponge or squirrel's tail on to this holder in order to remove the membrane in croup.

The following instruments, formerly in the possession of Morell Mackenzie, have been presented to the Royal Society of Medicine by Dr. Dan McKenzie to be included amongst the "Mackenzie relics." These instruments after Mackenzie's death came into the possession of the late Mr. Cresswell Baber, and were presented by Mrs. Baber to Dr. Dan McKenzie.

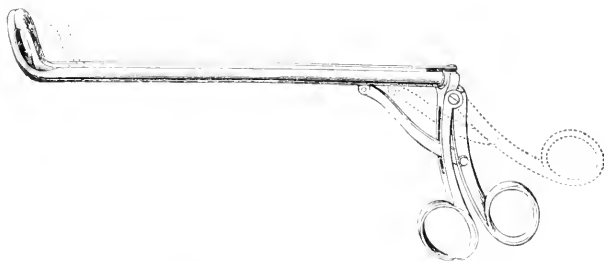


FIG 6.—Mackenzie's sliding post-nasal forceps.

Mackenzie's Sliding Post-nasal Forceps (fig. 63, vol. ii, p. 275).

Mackenzie's Reversible Tonsil Guillotine, engraved with Mackenzie's name (fig. 4, vol. i, p. 11).

Uvula Forceps.

Frankel's Palate Hook (fig. 32, vol. ii, p. 248).

Elsberg's Uvulatomer (reference to this instrument in vol. i, p. 14).

Mackenzie's Guarded Wheel Ecraseur, similar to that previously referred to (Fig. 3) and designed by Morell Mackenzie. It was made for large naso-pharyngeal growths.

SPASM AT THE ENTRANCE TO THE ŒSOPHAGUS.¹

BY A. BROWN KELLY, M.D.

THERE is a variety of dysphagia, not uncommon in middle-aged women, which in all cases presents almost identical signs and symptoms and which reacts uniformly to treatment, but as to the pathology of which we are ignorant. In order to obtain information as to the local condition

¹ Paper read at the Summer Congress of the Laryngological Section of the Royal Society of Medicine, May 2, 1919.

at fault the hypopharynx and œsophagus of a number of these patients have been examined, and I now beg to submit the results and some deductions for your consideration.

All my patients were women, and two-thirds of them were unmarried. When first seen by me the majority were between forty and fifty years of age, and the dysphagia—which was the sole symptom complained of—had been present for years.

The onset in some had been gradual and marked by occasional sudden attacks of choking, with intervals during which there was no difficulty. These intervals had grown shorter by degrees until dysphagia was constant. In others the disability appeared to have reached its maximum severity at once, and dated from the time a foreign body, *e. g.* a currant, pea or piece of crust had stuck in the throat. In no instance could an account be obtained of the throat having been burned by hot food or drink.

The history of a long period of anæmia, dyspepsia or impaired general health preceding the onset of the symptoms was occasionally given, and several of the patients were neurotic. On the other hand, the dysphagia was regarded as primary by a fair proportion of the patients, and the disturbance of nutrition and nervousness in connection with swallowing as secondary.

The symptoms need only be briefly enumerated: Dysphagia referred to the level of the larynx; necessity of masticating thoroughly and swallowing carefully—dietary consequently reduced to semi-solids; frequent catching of a fragment of food at the mouth of the œsophagus, with distressing efforts to dislodge it; regurgitation of liquids on attempting to wash down the impacted body; nervousness in regard to eating, especially in the presence of strangers, and preference to have meals alone and at leisure.

The dysphagia was attributed by the patient usually to a tightness of the throat or to something behind the larynx gripping the food, so that a deliberate effort to force it down was required. In a few cases weakness of the muscles of swallowing was stated to be the cause of the disability, so that when the patient returned home in the evening—tired after the day's work—she was unable to get food over until she had rested.

Examination of the mouth and pharynx as a rule revealed nothing abnormal, but in a few instances the mucous membrane had a pale, waxy aspect, and the tongue was smooth and devoid of papillæ. I was inclined to attribute these appearances to the anæmia resulting from the restricted and often insufficient dietary. The fissures at the angles of the mouth, sometimes also met with in these patients, were ascribed to saliva trickling out during sleep. The secretion of saliva, as is well known, may be considerably increased in œsophageal obstruction—Roger's salivary-œsophageal reflex.* The appearances noted were therefore regarded, not as causes, but as consequences of the dysphagia.

The treatment I formerly used in this affection was that commonly in vogue, *viz.* the passing of bougies without previous inspection of the œsophagus. In some cases no special resistance was met with: in others it was almost unyielding.

When dealing with a case of the latter kind some years ago, as it was thought inadvisable to persevere in a procedure by no means free from danger, the patient was put under a general anæsthetic, and on inspection a circular membranous web was found, reducing the lumen

of the entrance to the œsophagus to about 5 mm. This was ruptured, and the patient got relief from all her symptoms. In this case, had the passage of the bougie at first succeeded, a diagnosis of spasmodic closure would have been made.

In view of this case and of the fact that a circular fold of mucous membrane forming a ring-like stenosis has been met with in the same situation by others, the question suggested itself, Is the obstruction due to spasm, as has been commonly assumed in the past, or to an organic stricture, resulting possibly from cicatricial contraction or the union of adjacent surfaces? In order to settle this it was necessary to determine the local condition at fault. I therefore selected cases in which very pronounced dysphagia had been constantly present for years and in which no bougie had been used. In these the entrance to the œsophagus was carefully inspected under chloroform. Ten such patients were dealt with in whom respectively the duration of the dysphagia had been 2, 3½, 5, 7, 8, 10, 12, 23 and 33 years, and in a patient aged 44, as long as she remembered.

On inspection it was found that the deepest part of the hypopharynx did not present the usual sphincter-like appearance. Instead of rounded folds, or cushions of mucous membrane forming a stellate arrangement, tense bands passed in various directions with their thin edges tightly pressed together. The entrance to the œsophagus appeared as a pin-hole, or small irregular opening, or obliquely placed slit, and was not always in the middle line. Sometimes one half of the mouth of the gullet seemed closed by a web passing backwards from the cricoid. The manner in which the appearances varied with the position and pressure of the endoscope, the rigidity of the tissues, and the caution necessary to avoid tearing any membrane that might be present, made the examination difficult. In several of the earlier cases, while manipulating the tube to obtain a fuller view, and in spite of all precautions, it suddenly slipped onwards into the œsophagus, and I was left in doubt as to whether a spasm had yielded or a membranous stricture had been ruptured. To determine this point in subsequent cases, a small-sized metal urethral catheter, which had been straightened and over the end of which the tip of a finger-stall had been tied, was passed through the constricted opening into the œsophagus, and the bag was then blown up and withdrawn. From the manner in which the folds of mucous membrane fell apart it became evident that the stenosis had been due to their firm approximation and not to organised adhesions between them. An œsophagoscope of large calibre was passed in order to widely dilate the mouth. The gullet was usually found unduly patent and occasionally pale and dry.

The results following the procedure described were striking and apparently more lasting than those obtained by the passage of bougies. At the first attempt to swallow after the stretching the patients felt as if something had been removed and at once announced that they were cured. Two or three days later, when the soreness due to the examination had passed off, they ate meat, ham, prunes and other foods of which for years they had been unable to partake. They also found that they could converse at meals and that they need not pay constant attention to mastication or be nervous about swallowing. As a consequence the general health improved and the weight increased. Some of the patients have had no return of their symptoms after an interval of one or two years; others after a few months have felt the need of

care and have shown a slight tendency to choke. In exceptional cases after a period of improvement lasting from one to three months there has been relapse, but normal deglutition has again been re-established—at least temporarily—by passing a bougie.

Dan McKenzie (JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY, 1918, p. 270) has reported the result of the examination of two pronounced cases of "post-ericoid spasmodic stricture." In this situation he found in both the lumen reduced to a small circular orifice of from 3 to 5 mm. The stricture resisted dilatation with the tube, but yielded easily to a bougie.

It having thus been demonstrated that the obstruction in this affection is caused by spasm at the entrance to the œsophagus, and only exceptionally by a membranous stricture, the nature or cause of the spasm has next to be considered.

Hysteria as a factor may be excluded at once. In hysterical dysphagia the symptoms are intermittent; often there is the want of desire to swallow, and the *bolus hystericus* and other stigmata may be present.

A few of the patients are neurotic and as such may be predisposed to spasm, but the majority betray no sign of this, state that they never were nervous until the dysphagia set in, and that it is only in connection with swallowing that they experience any nervousness. The fact that almost all the patients are women may be adduced in favour of a neurotic basis, but when we consider that most cases by far of cancer at the entrance to the gullet occur in women, one asks whether there is not something at this site peculiar to the sex that predisposes it both to cancer and to spasm. I might here mention that of my cases of cancer in the hypopharynx and at the mouth of the gullet over 75 per cent. occurred in women, while, of those of cancer elsewhere in the œsophagus over 80 per cent. occurred in men. In cardiospasm and enterospasm, on the other hand, the sexes are affected about equally.

The frequency with which a history is given of the dysphagia having set in after the impaction of a foreign body at the entrance to the gullet strongly suggests an injury in this situation as the primary cause. Bronner (JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY, 1913, p. 32) found in several cases of the same kind a small fissure at the mouth of the œsophagus, and thought that this was of traumatic origin due to the irritating effect of a foreign body. He also considered that it was related to the dry catarrh of the pharynx and hypopharynx, which frequently coexisted. Chevalier Jackson also has observed spasm of the œsophagus resulting from lesions that produced no sensation themselves.

As bearing upon the ætiology of the affection under discussion, I should refer to the case of a man whose symptoms led me to believe he had spasm of the upper end of the gullet. He had had dysphagia for nine months and morsels of food occasionally stuck behind the larynx, causing complete occlusion. One day a small piece of veal was impacted for two hours. After this had been dislodged he was unable to swallow anything, even water, for four days, and in consequence was admitted to hospital as an urgent case. By œsophagoscopy I found nothing abnormal at the mouth of the gullet, but a short distance above the hiatal level a malignant growth. When last I saw him, three weeks after the passage of the œsophagoscope, he considered himself greatly improved. Since the examination he had been able to

take soft food freely without any fear of choking such as he previously had. In this case the dysphagia due to the growth had become greatly aggravated by spasm at the mouth of the gullet, which probably was first excited by injury from some rough morsel of food and latterly made absolute by the accident with the piece of veal. After the mouth of the gullet had been stretched by the œsophagoscope the spasm passed off and the patient was comparatively comfortable, although the malignant neoplasm was presumably growing.

In attempting to elucidate the pathology of this affection it might be helpful to take a wider view of the subject than we have been accustomed to and consider spasm as it occurs at the lower end and other parts of the gullet, at the pylorus and in the intestine. In seeking for conditions common to all these situations we are at once confronted with the innervation peculiar to the whole alimentary tract from the mouth of the œsophagus to the end of the rectum. We find, apart from the other nerve-supply, that the gangliated plexuses of Auerbach and Meissner form in themselves a complete arc, so that stimuli received by the sensory portion (Meissner's) are conveyed by communicating fibres to the motor portion (Auerbach's). If there is a disturbance of balance between the two and the sensory is in a hyperæsthetic state or unduly irritated by a foreign body, fissure or inflammatory condition, or, if the motor is unduly stimulated, it is probable that abnormal local contraction or spasm will result, and once this spasm is established it will tend, as Chevalier Jackson states, to be perpetuated by the nerve-cell habit.

A CLINICAL TYPE OF DYSPHAGIA.¹

By D. R. PATERSON, M.D.,

Surgeon to Ear, Nose and Throat Department, King Edward VII Hospital, Cardiff.

I SHOULD like to call more particular attention to the association of two local conditions met with in the upper food-passage, viz. what is usually called spasmodic dysphagia and the affection known as superficial glossitis. Both may and do occur independently of each other. In combination the relationship is not quite clear: it may be coincidental, but the practical aspect of it is that the condition of the patient is modified by it. In my experience both states are practically confined to women.

The history given by the patient is that dysphagia is first noticed in early middle life—she gets what is known as “a small swallow,” *i.e.* a longer time is taken at meals; later the food is restricted to soft solids and finally to fluids. When the patient comes under observation she is pale, sallow, and has lost weight. On inspection of the mouth the upper surface of the tongue appears excessively smooth and glossy, with whitish patches in places on the dorsum as if it had been brushed by a solution of nitrate of silver. The same patchy appearance may also be seen on the pale buccal mucosa, and a characteristic feature is the cracking of the angles of the mouth. There is a tendency to dryness of the mouth, the secretion being seen as white points of sticky

¹ Paper read at the Summer Congress of the Laryngological Section of the Royal Society of Medicine, May 2, 1919.

mucus. This condition has been called chronic glossitis, superficial glossitis or glossy tongue, though it is by no means confined to the tongue, and is said to be usually the result of chronic dyspepsia.

Unfortunately the subject of mouth conditions is rather ignored by the laryngologist, possibly because he looks upon that cavity as not belonging to him, and is apt to regard it merely as a space through which to inspect the pharynx, and yet it cannot be gainsaid that as part of the upper food-passage it has a relation to conditions lower down, and therefore ought to receive careful consideration. In the class of cases under discussion a similar condition is often noted in the middle and lower pharynx. There may be the same thinning of the mucosa flecked with white, sticky mucus.

For some years I have been in the habit of examining all cases of difficulty of swallowing by the direct method, usually under a general anæsthetic, and have found the changes I have described in the lower pharynx and hypopharynx, and in a few cases even in the upper section of the gullet. The thinness of the mucosa looking as if it were stretched over the cricoid is often noticeable, and special care has to be exercised in passing the tube. Even slight pressure of a beaked tube may be sufficient to produce a crack, for the mucosa has lost that suppleness and resiliency which permits the cricoid being tilted forward in order to get a good view of the introitus. In my early experience I have more than once inserted the beak into a fissure and landed in the submucous tissue, fortunately as it happened without untoward result, and it has made me very cautious in all such manipulations in these cases. The presence of spasm increases the risk of injury, and one of the purposes of this note is to call attention to this. My usual procedure now is to first satisfy myself that there is no growth in the hypopharynx, and then pass a bougie through the tube into the contracted œsophagus, using the bougie to pilot the tube through.

It appears to me that the changes in the hypopharynx mucosa increase the difficulty in swallowing. Certainly it is easier to pass a tube where they are absent, and not merely from the feeling that it can be attempted with greater safety. In a patient aged thirty-eight, who was seen in 1915 for dysphagia of over two years' standing and only showed a slight smoothness of the tongue, a good-sized tube was passed with slight pressure. Last year—*i. e.* three years later—she returned as there was a gradual relapse and only fluids could be managed. The changes in the mouth were now more advanced and at the entrance of the gullet—this was quite marked—the mucosa cracking easily and bleeding. Improvement followed the passage of a tube, but this is not nearly so well sustained as before.

The presence of a foreign body seems to increase the degree of spasm in such cases. In a woman with a "small swallow" a soft pea, unintentionally swallowed, sufficed to completely block the passage, the patient coming to hospital forty-eight hours later wiping the saliva which she was unable to pass, yet after picking out the pea a good-sized tube passed through without difficulty. In another similar case a smooth plum-stone impacted at the entrance of the gullet slipped when grasped by the forceps and went through, followed by a fair-sized tube.

With regard to the changes which underlie this condition, my own observations have been confined to the buccal and tongue mucosa, pieces of which I have examined microscopically. They confirm the

statement generally made that there is a thinning of the superficial epidermal layer, and an apparent thickening, from infiltration, of the underlying tunica propria. It is possible to see in this an explanation of the want of resiliency which may increase the difficulty of the passage of food. It is not infrequently stated that superficial glossitis is related to syphilis, possibly from the statement of Goldschmidt (*Berlin. klin. Wochens.*, 1899) that it was present in 47 out of 60 cases of smooth atrophy of the tongue. This cannot be said for the state under consideration, for out of a considerable number of cases during the last few years, the Wassermann reaction was negative except in two—and antispecific treatment in both made not the slightest change. In all these cases the effect of nasal disease may be excluded.

The question may, I think, fairly be raised, What relation do these changes bear to the spasmodic condition? Starck points out ("Œsophagoskopie," p. 134) that spasm almost always occurs as a symptom of an anatomical lesion of the œsophagus or other organs (stomach, vertebral column, etc.); less frequently can it be regarded as a disease *sui generis*, a motor neurosis. He further states that as symptom it is found most frequently in malignant disease of the gullet, and he has pointed out that it may often possess the significance of an early symptom. The first appearance of dysphagia in carcinoma often does not occur at the seat of the lesion, but rather at the entrance, more rarely at the outlet, of the gullet. In view of the anatomical changes which I have described in the upper food-passage it is not unreasonable to assume that they may take some part in the production of spasm, and we may see in this an explanation of the relationship of these two conditions.

One further point may be remarked upon, viz. the not infrequent supervention in such cases of malignant disease at the mouth of the gullet. This happens too often to be merely a coincidence. In more cases than one under my observation for a long period this termination has occurred.

To sum up: (1) Spasmodic dysphagia in women is sometimes associated with definite changes in the upper food-passage. If they are not the sole cause of spasm, in all probability they increase the tendency.

(2) That the association produces a more obstinate type of dysphagia both in relation to treatment by dilatation and the effect on the general condition of the patient.

THE AQUEDUCT OF FALLOPIUS AND FACIAL PARALYSIS.

By DAN MCKENZIE, M.D.

PART I: THE AQUEDUCT OF FALLOPIUS.

(Continued from p. 247.)

The figures are as follows:

Thirty-nine bones were available—16 acellular and 23 cellular—belonging to all the seven decades reviewed. The greatest distance in acellular bones was 5 mm., the least 2 mm., the average 3.2 mm.

The greatest distance in the cellular bones was 4 mm., the least 2 mm., the average 3 mm.

There is so little difference, therefore, on the whole between the two varieties in this particular measurement, that for practical purposes it may be ignored. But, such as it is, it indicates a tendency for the Fallopian canal to lie nearer the meatus in cellular bones, as if the development of the cells pushed the Fallopian canal forward.

A similar comparison between acellular and cellular bones was effected with regard to the distance between the groove for the lateral sinus and the posterior meatal wall, with a much more definite result, and one quite in keeping with the usual teaching. Although the point

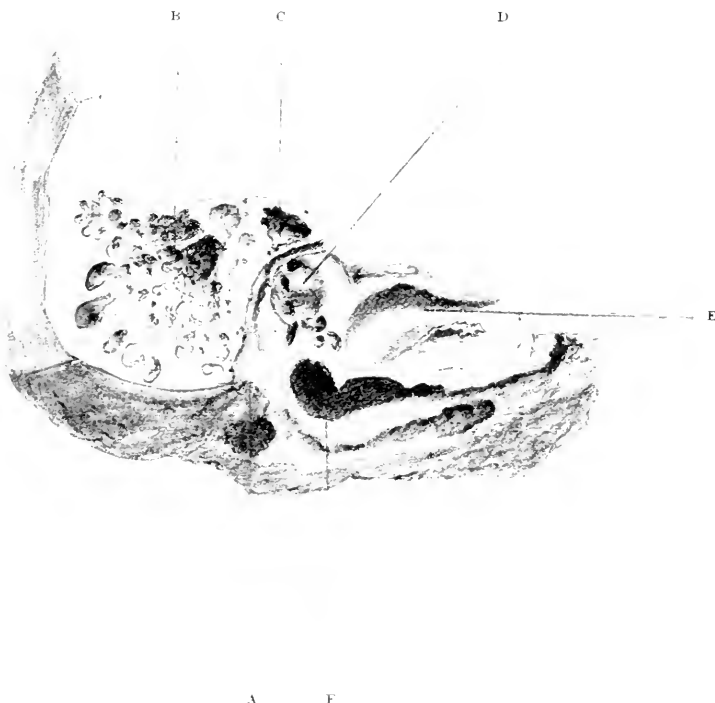


FIG. 11.—Pneumatic mastoid cut to show relationship of cells to the vertical segment of the Fallopian canal. The roof of the tympanum has been removed. A. Stylomastoid foramen. B. Mastoid cells. C. Attic and aditus ad antrum, with tympanic segment of Fallopian aqueduct below. D. Promontory, with the oval window. Note cells leading out of tympanum towards E, the carotid canal, and F, the jugular foramen. (Right temporal, bone 18, female, aged forty-three, slightly reduced, pose rotated.)

is one which has no direct bearing upon the anatomy of the Fallopian canal, it is here inserted for its practical interest.

Thirty-four bones were valid for the purpose—15 acellular and 19 cellular. In the former the distances were: Highest, 15 mm.; lowest, 3 mm.; average, 9.7 mm. (The very low reading of 3 mm. was found in a bone of the third decade.) In the cellular bones, on the other hand, the distances were much greater: Highest, 20 mm.; lowest, 10 mm.; average, 13.9 mm.



FIG. 12.—A, Mastoid process; B, Lateral sinus groove; and C, Tympanic membrane (with malleus handle) from within, showing relationship to Fallopian canal. D, Stylo-mastoid foramen. (Right temporal, bone 45, male, aged sixty-two, slightly +, pose slightly oblique.)



FIG. 13.—Temporal bone from within. A, Stylomastoid foramen. B, Lateral sinus groove. The antrum is seen above and behind the external auditory meatus. (Bone 20, right temporal, male, aged fifty-three, reduced one quarter, pose oblique.)

The same comparison was also instituted in the matter of the distance between the stylo-mastoid foramen and the lateral sinus groove. The following are the figures:

In acellular bone, 16 available. Highest, 9 mm.; lowest, 2 mm.; average, 6.1 mm.

In cellular bones, 23 available. Highest, 13 mm.; lowest, 4 mm.; average, 7.6 mm.

This measurement is illustrated in Figs. 8, 11, 14, 15.

The following measurements display the relations of the stylo-mastoid foramen to the tip of the mastoid process in adult bones (see also Figs. 1, 2, 3, 5, 6, 7, 11, 14):

The stylo-mastoid foramen lies anterior to the tip of the mastoid process. Highest, 14 mm.; lowest, 2 mm.; average, 7 mm. It lies



FIG. 14.—Specimen showing pyramidal cells in close contact with the Fallopiian canal. From without. A. Styloid process. B. Stylo-mastoid foramen. C. Pyramidal cell with Fallopiian canal at bend above and behind it. D. External semicircular canal opened up. Note relationship of this canal and its prominence to the Fallopiian aqueduct below it. (Bone 28, left temporal, male, aged twenty, pose oblique, the styloid process being vertical, $\times 2$.)

medial to the tip. Highest, 12 mm.; lowest, 3 mm.; average, 7 mm. Its opening lies superior to the tip. Highest, 19 mm.; lowest, 6 mm.; average, 12 mm.

These measurements show such wide variations as to render the taking of any "average" distance fallacious. Obviously they depend upon the size and situation of the mastoid tip—one of the most variable features in the temporal bone. All they permit us to say is that the stylo-mastoid foramen lies anterior, medial, and superior to the tip of the mastoid.

In infantile bones a special note is necessary regarding these data (see later).

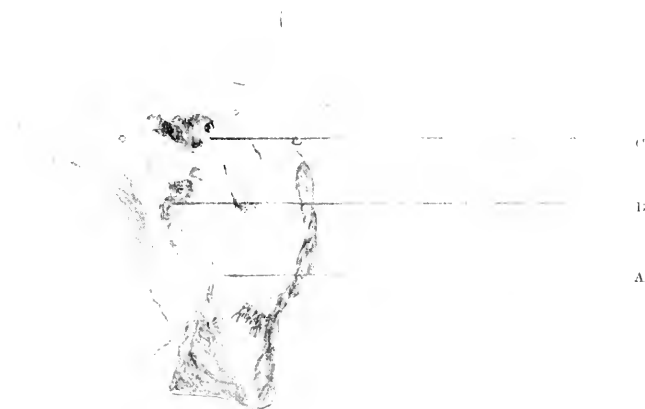


FIG. 15.—Same temporal bone as Fig. 14. Viewed from within. A. Stylo-mastoid foramen. B. Cluster of cells continuous with c in Fig. 14. c. Antrum. Note proximity of lateral sinus groove to cells and canal. (Pose natural, life-size.)

B

A



FIG. 16.—Section passes through tympanum, antrum (A), lateral sinus groove (B) and Fallopian canal, the tympanic segment of which has been opened up in its entire length. Note the foramen leading to the geniculate at the junction of the roof and medial wall of the tympanum. (Bone 39, right temporal viewed from without, male, aged fifty-three, pose natural, enlarged by 4.)

The last relationship of the stylo-mastoid foramen to be considered is that to the jugular bulb (see Fig. 17). This is another important relationship to the operator, as it occasionally happens in otogenic venous thrombosis that the lateral sinus, the jugular bulb and the jugular vein in the neck must be opened up in one continuous gutter. In the effort to reach the bulb the facial nerve in the vertical and at its exit at the stylo-mastoid foramen is endangered, as in a certain number of cases the jugular bulb occupies a position anterior to the plane of the vertical segment of the aqueduct. In the majority

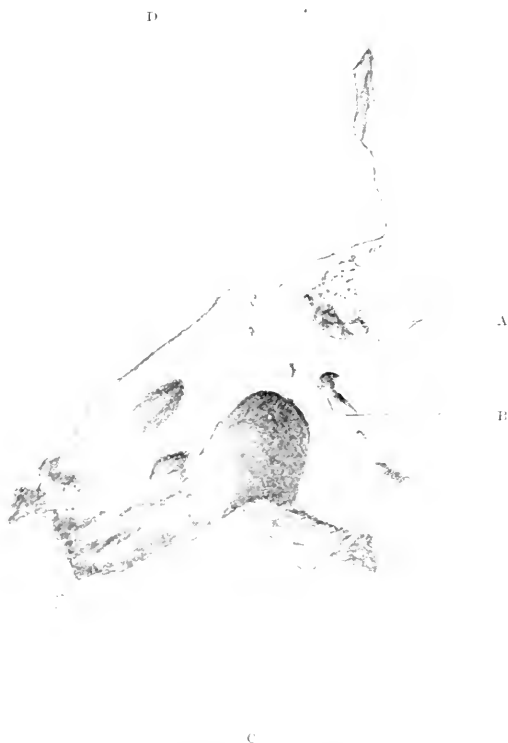


FIG. 17.—Antrum (A), vertical segment of Fallopiian canal (B) and roof of jugular foramen (bulb) (C) opened from behind. D. Internal auditory meatus. (Bone 43, right temporal, slightly enlarged, male, aged sixty-eight, pose rotated and oblique.)

of instances, however, the bulb could be opened up from behind without endangering the facial nerve.

The numbers are as follows: Forty-three bones in all were available—34 adult, and 9 in the first decade. Of the total 9 only were "inaccessible," and the rest more or less easily accessible from behind without imperilling the facial nerve.

The distances between the stylo-mastoid foramen and the jugular sulcus were (in adult bones): Highest, 11 mm.; lowest, 2 mm.; average, 4.8 mm. And in bones of the first decade: Highest, 7 mm.; lowest, 1 mm.; average, 4.2 mm.

The recess for the reception of the dome of the jugular bulb shares with the mastoid process the reputation of being extremely variable in size and situation.

In some its situation on the under surface of the petrous is scarcely perceptible. In others, again, it is so great as to encroach upon the middle ear, raising the floor of that cavity to a level that brings the bulb of the jugular vein to a position which would render it liable to be wounded in carrying out the simple every-day procedure of paracentesis for suppuration of the middle ear (Fig. 18). The Cheatele collection contains seven of these large jugular sulci.

The following numbers give the depth of the vertical at its upper end and at the stylo-mastoid foramen from the outer surface of the bone (Fig. 3):

Depth of upper end of vertical (37 bones valid): Highest, 21 mm.; lowest, 7 mm.; average, 14.3 mm.



FIG. 18.—Specimen with an enormous jugular bulb (A), which is seen extending up into the tympanum as high as the niche of the round window (B). C. The oval window. D. The stylo-mastoid foramen. Part of the thin bony floor of the tympanum has been removed. (Bone 27, right temporal, slightly enlarged, male, aged sixty-eight. Bone has been tilted to display features.)

Depth of stylo-mastoid foramen (37 bones valid): Highest, 17 mm.; lowest, 7 mm.; average, 11.6 mm.

(Note.—This last measurement was only recorded when the canal could be projected on to the mastoid process. When it lay further forward so as to correspond to the meatus the measurement was not taken.)

In the first decade these distances were: Upper end of vertical—highest, 14 mm.; lowest, 3.5 mm.; average, 8.8 mm.; and stylo-mastoid foramen—highest, 10 mm.; lowest, 5 mm.; average, 7.7 mm.

The Pyramidal Segment or "Bend" is that portion of the Fallopian aqueduct which lies medial and slightly posterior to the pyramid, where the canal changes its direction from the approximate horizontal of the tympanic segment to the vertical (see Figs. 14, 16, 19, 21, 34, 35, 36).

It is thus a rectangular curve, which in most of the specimens was found to be gradual, the curve implicating from 2 to 6 mm. of the canal. In four adult specimens out of 39 bones, however, the angle was abrupt, and the same characterised two of the ten infantile bones (Fig. 33).

Although the sinus tympani comes into relationship with the upper part of the vertical rather than with the pyramidal segment, this is perhaps the most convenient place to deal with that recess, which is a small cell-like extension of the tympanic cavity backwards rather below the level of the oval window extending under the Fallopian canal in such a way as to undercut it.

The practical interest in the sinus consists in the fact that this is a favourite site for caries of the bone, with granulation-tissue formation; in chronic suppuration of the middle ear, and that in performing the radical mastoid operation one frequently finds oneself impelled to curette this region thoroughly (see later). The proximity of the

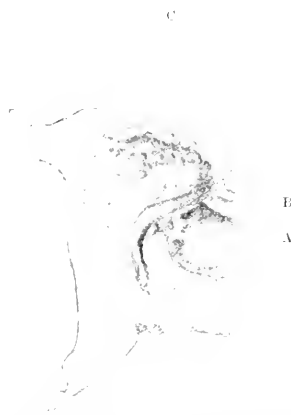


FIG. 19.—The pyramidal (bend) and tympanic segments opened up to show their relationship to the tympanic cavity, oval window, processus cochleariformis (B) and external semicircular canal (C). A is the promontory. The petrous has been divided across transversely. (Bone 36, right temporal, male, aged nine, slightly +, natural pose.)

Fallopian canal renders such a procedure hazardous to the facial nerve. Consequently, it is important to obtain data regarding the recess.

Thirty-five adult bones were examined in this matter; in 13, the sinus tympani was "shallow" and ill-formed; in 21 it was "deep," and in one it seemed to surround the canal, but it did not actually do so, the note on the finding being (Bone No. 42): "Sinus tympani in apposition with a mastoid cell under the canal, but not communicating with that cell." In one (Bone No. 2) it did, however, entirely pass behind the canal to communicate with the mastoid cells, but whether this communication was natural or artificial I cannot say.

In the ten bones of the first decade seven showed a deep undercut by the sinus tympani, one was "shallow," and in one it was absent.

The depth of the sinus tympani ranged from 0.5 to 3 mm.

The development of the sinus tympanicus therefore shows considerable variation, and this is also borne out by the Cheatle collection, in which several specimens show quite considerable cell-like developments

of this *cul de sac*. In one it runs "backwards, outwards and downwards behind the facial nerve to below the loop of the external semicircular canal, the inner wall being formed by the vestibule, posterior semicircular canal and sulcus jugularis, where the bone is very thin."

Obviously, then, suppuration and caries of this region must expose the nerve to serious danger.

The presence of a "pyramidal" cell or cells in relation to the bend has already been considered.

The Tympanic Segment (Figs. 5, 6, 7, 9, 11, 12, 14, 16, 18, 19, 21, 23, 27, 29, 31, 33 and 37) extends between the genu and the pyramidal segment. Ordinary descriptions to the effect that it runs between the roof and inner wall of the tympanum are inaccurate. The canal does not reach the roof save at its innermost (medial) end, where it leaves the tympanum for the genu (Fig. 16). The antro-tympanic cavity is so shaped and disposed that the facial canal runs through the tympanum

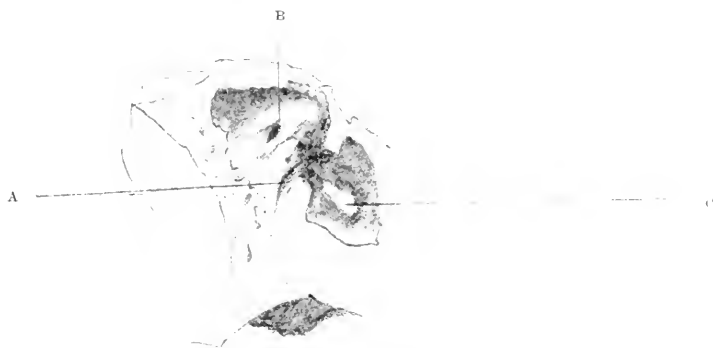


FIG. 20.—Antro-tympanic cavity in an infantile bone from a postero-external position, looking into c, the Eustachian tube. A marks the pyramidal position, looking into c, the Eustachian tube. A marks the pyramidal segment of the Fallopi canal, and B is the external semicircular canal opened up to show its relationship to A. (Bone 13, right temporal, slightly +, female, aged seven, pose natural.)

along its posterior internal wall just under the external (lateral) semicircular canal, which bulges out over it. Thus we may say that the aqueduct lies at the junction between the postero-internal tympanic wall and the prominence of the external (lateral) semicircular canal. About midway in its course it comes into close relationship with the oval window and stapes, forming as it does a moulding, so to speak, in the upper arch of the niche. Immediately medial to the oval window it passes behind the nipple-like end of the processus cochleariformis (Fig. 19), and now at length, after having undergone a gradual and steady rise in level as it is followed from without in, it reaches the junction of the roof and inner wall and then straightway leaves the tympanic cavity, piercing the wall to reach the geniculate angle.

Dehiscences in the wall of the tympanic segment are known to occur, and in view of their important clinical bearing considerable attention was devoted to them in the course of the investigation. Out of 42 bones available, dehiscences in the tympanic segment were found as follows:

First decade	=	0	out of 10 specimens.
Second ..	=	0	.. 4 ..
Third ..	=	1	.. 8 ..
Fourth ..	=	2	.. 5 ..
Fifth ..	=	2	.. 6 ..
Sixth ..	=	2	.. 6 ..
Seventh ..	=	3	.. 3 ..

That is to say, in specimens from the first thirty years of life, only 1 out of 22 bones showed dehiscence, whereas in the last forty years out of 20 bones, 9, or nearly 50 per cent., showed dehiscences.

This tendency to the appearance of defects in the older bones may presumably be ascribed to the natural osteoporotic changes of advancing

A B



FIG. 21.—Tympanum, aqueduct of Fallopius, and external semicircular canal, A, through which the section has passed. The tympanum has been unroofed. The lower portion of the tympanic membrane is *in situ*. B. The geniculate bend. C. Stylomastoid foramen. D. A group of large air-cells in close contact with the lateral sinus groove. Note the slope of the tympanic segment and its relations to oval window and external canal (A). (Bone 16, right temporal, male, aged fifty-four, pose natural, slightly reduced.)

years. But it must be recorded that former observers have found dehiscences to be more common in early life.

The extent of the defect varied from an opening one millimetre in length to absence of the whole length of the tympanic bony wall of this segment of the canal.

(It is necessary to add that the condition of the specimens rendered it sometimes difficult to make sure of the presence or absence of bony defects in the tympanic segment. Every effort was made, however, to obtain accurate observation.)

(To be continued.)

SOCIETIES' PROCEEDINGS.

ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

*December 7, 1917.**President: DR. A. BROWN KELLY.*

ABRIDGED REPORT.

(Continued from p. 256.)

Foreign Body (Collar-stud) in Left Bronchus of a Child, producing Collapse of Lung of a Year's Duration.—J. Dundas Grant.—A boy, aged nine, was taken ill suddenly on December 6, 1916, with vomiting, pain on the left side of the chest, and cough, which soon subsided. He was ill in bed for weeks, and then went away for five weeks.

In August, 1917, he was admitted into hospital. Dr. Perkins found that the right lung extended to the left parasternal line and that there were physical signs of supplemental breath-sounds, with no crepitations; the left side was flat and contracted, the lung collapsed, and the stomach elevated. Von Pirquet's test was negative. He complained of pain in the left basal region; there was cough and expectoration; the leucocytes were 9000. X-ray examination on the left side showed general diffuse opacity, obscuring the heart and diaphragm, the latter being made out with difficulty and appearing to be raised (stomach translucency was higher than normal); the heart was withdrawn to the left; there was no evidence of effusion but of general pleural thickening.

Another examination by Dr. Melville on October 1 showed at the level of the left bronchus a shadow of characteristic shape suggesting the appearance of a collar-stud at the spot where an indistinct shadow had been previously noted.

On October 17 I endeavoured, with suspension laryngoscopy, to introduce a tube through the larynx, but found that a large tube would not pass. I therefore performed a high tracheotomy and painted the trachea down to the bronchi with 20 per cent. cocaine, and then introduced a bevelled-ended bronchoscope, 5 mm. in diameter, for a distance of $4\frac{1}{2}$ in., when I was able to detect the foreign body and to seize it with Killian's pronged forceps, drawing it out with the bronchoscope tube. A good deal of mucus escaped. A Durham's "lobster-tailed" tracheotomy tube was introduced, as the attempt at translaryngeal bronchoscopy had caused oedema of the larynx. The tube was removed in two days.

The condition of the patient rapidly improved, but expansion of the lung must necessarily be slow, and to assist this he is learning suitable exercises in breathing under Mr. Courtland MacMahon.

DR. D. R. PATERSON: Dr. Dundas Grant was wise in doing a low bronchoscopy, because if the foreign body was displaced in getting it out, it might easily have slipped into the other bronchus, and then there would have been very great difficulty, as the lung on the affected side was

totally collapsed. Such cases require tubes of as large calibre as possible to facilitate the easy extraction of the foreign body.

Dr. H. J. BANKS-DAVIS: In 1912¹ I exhibited before the Section a pathological specimen, now in the Museum of the Royal College of Surgeons, of the larynx of a child, aged three, with a collar-stud impacted between the vocal cords, which caused death. The case had been mistaken by the casualty officers for diphtheria, and treated as such with antitoxin. Later a tracheotomy was performed, but in spite of this the child died.

Pre-tracheal Abscess of Acute Development in a Middle-aged Woman, producing Dysphagia and Dyspnoea.—J. Dundas Grant.

—The patient, a woman, aged forty, was seen at Brompton Hospital on October 30, complaining of occasional loss of voice for two years. The larynx was normal, with the exception of paresis of the internal tensors of the cords: the posterior wall of the pharynx was glazed with yellow secretion. The sinuses were clear. There was a perforation of the quadrilateral cartilage from a simple ulcer, and active lupoid ulceration on the anterior edge of the right inferior turbinate. A solution of chloride of zinc was applied to the vocal cords and she was ordered a nasal wash.

A fortnight later she attended with a painful swelling in the neck, difficulty in breathing and pain on swallowing. She stated that before leaving the hospital on the previous occasion her voice failed, and next day she had "an inflamed throat and high temperature."

On November 13, beyond the paresis of the internal tensors the larynx was otherwise normal, but there was a red, tender swelling over the region of the thyroid body. On the following day I opened the swelling. Pus was evacuated by Hilton's method. The abscess-cavity was cleaned out and drained: two days later the tube was removed and a plug of gauze inserted. After ten days the wound had practically healed. The pus contained no tubercle bacilli, but streptococci and staphylococci.

In July she had erysipelas, but had no evidence of tubercle except lupus in the nose. There was no previous swelling to indicate a thyroid cyst which might have suppurated. I am at a loss to trace the causation of this abscess.

A Surgical Contretemps, illustrating the Value of Endoscopy.

—Herbert Tilley.—On November 15 I performed a submucous resection of a septal deformity on a young lady, aged seventeen. The anaesthetist asked if he might give intratracheal ether by means of a new tube. The latter consisted of two parts: (1) a narrow rubber tube occupied by a coil of wire so that the patient could not obstruct the entry of vapour by biting the tube; and (2) a distal tube about 5 in. long, with a funnel-shaped proximal end to occlude the larynx. The distal end of (1) was intended to fit tightly into the funnel of (2). The conjoined tube was passed through the larynx by direct vision by the anaesthetist, anaesthesia was induced, and the operation went off without a hitch. When it was completed he attempted to withdraw the tubes, but only the proximal portion (1) came away. Passing my finger to the upper aperture of the larynx I was unable to feel the funnel-shaped portion of the distal tube (2)—it was obviously in the trachea! A friend motored to my house for my endoscopic outfit, and after some fifteen minutes' interval

¹ JOURN. OF LARYNGOL., RHINOL., AND OTOL., p. 98.

I was able to see and withdraw the funnel-shaped tube from the trachea—no harm has resulted from the accident. Obviously the only alternative would have been a tracheotomy, and in pre-endoscopic days a difficult "situation" might have been created.

(Intratracheal tubes exhibited.)

Mr. FRANK A. ROSE: Recently, when doing submucous resections of the septum, Mr. Boyle has anaesthetised for me *per rectum*. In all these cases, including bronchoscopy, the anaesthetic has been very satisfactory.

Mr. W. M. MOLLISON: I have operated upon one or two septa with intratracheal insufflation of ether. The object of this method is to prevent blood entering the trachea. There is one disadvantage in this method, for the back stream of air through the nose is embarrassing: bubbles of air come through the nose and form a froth with any blood present. I have given it up for that reason, though it is an ideal anaesthetic for most nose operations. Rectal anaesthesia does not prevent blood going down the trachea.

Mr. TILLEY (in reply): The object is to prevent blood entering the larynx, and from that point of view the intratracheal method is ideal, but, as Mr. Mollison said, the only inconvenience of the intratracheal method is that blood tends to froth forwards into the nasal cavities. For bigger operations about the nose and throat I think the intratracheal method is ideal. I have not seen rectal anaesthesia induced for two or three years, but the objection used to be that the patient afterwards suffered from tenesmus and diarrhoea and bloody stools.

Osteoma of Left Frontal Bone.—Hunter Tod.—Male, aged thirty-three. For eighteen years he had noticed that the left eye was becoming more prominent and was being gradually pushed down and outwards. He had suffered constantly from headaches, worse on stooping. There had never been any discharge from the nose.

He was operated on in April, 1913, by a surgeon in Lincolnshire. I saw him first in December, 1913, and admitted him into the London Hospital in January, 1914, for operation. A curved incision was made just beneath the eyebrow. On exposing the bone the roof of the orbit was found to be irregular and nodulated, and a great deal of very hard bone was chipped away from the roof, but the frontal sinus could not be found. The dura mater was not exposed for fear of setting up meningitis, and it is possible that owing to this the operation was not sufficiently extensive. The wound healed well after the operation and the patient was much relieved of his headaches. I have not seen the patient since he left the hospital, but as his medical man has written to me saying that there is a recurrence of the severe headaches and apparently of the growth itself, I have asked the man to attend this meeting in order that the members may see his present condition, which I cannot for the moment foretell.

Mr. TILLEY: The recent increase or recurrence of headaches is probably due to re-appearance of the condition which Mr. Tod dealt with in the early stage. If you pass a finger as far backwards as possible over the upper surface of the globe you can feel a small hard tumour.

Dr. PERRY GOLDSMITH: In view of what the patient says I should suggest that he is better left alone.

Mr. HUNTER TOD (in reply): I agree with Mr. Tilley that on examining with the finger one can feel a growth. At the first operation

that was the chief characteristic. I removed bone as far back as I could, but did not completely remove the growth, being afraid to injure the optic nerve. I have not seen him since the middle of 1914. The pain in the head may be due to pressure. Mr. Gilbert Scott has shown a case in which, after one of these growths was removed, the patient, a year afterwards, came up suffering from headache with rattling in the head. A skiagram showed the brain to be compressed and, above the level of the brain, a layer of fluid and air. Probably some puncture had been made through the dura mater in removing the osteoma. It was the recollection of this case which made me fear to do more here.

Stenosis of the Glottis, from a Combination of Tubercle and Syphilis, requiring Tracheotomy.—**Sir StClair Thomson.**—This patient, a woman aged fifty-one, was shown before the Laryngological Society of London on November 2, 1906.¹

Mrs. D—— first came under notice in 1906 for hoarseness and marked dysphagia. The condition in her larynx at that time was entirely attributed to tubercle, for although tubercle bacilli were never found in her sputum, there were signs in the upper lobes of both lungs. Low tracheotomy under cocaine was performed in February, 1906. Since those days the Wassermann test has been discovered, and later on we found that the patient gave a positive reaction. Patient has quite a good voice. Although warned on the subject, the patient has neglected to come up as frequently as necessary to have a worn-out tracheotomy tube replaced by a new one. (Her tube has been worn, unwashed and unchanged, for seven years.) It will be noticed that the one I show is a mere shell, and that the vertical limb has completely worn away. The interesting points of the case are the following: (1) Combination of tubercle and syphilis; (2) comfort of a low tracheotomy; (3) the permanency of the cicatrization of the larynx; (4) the absence of pulmonary symptoms in spite of wearing a tracheotomy tube for eleven years; (5) the necessity of renewing tracheotomy tubes; (6) the risk that some patients will run, even although warned.

Stenosis of the Glottis from Combined Tubercle and Syphilis requiring Tracheotomy.—**Sir StClair Thomson.**—The patient, a male, aged forty-one, was discharged from the Navy two years ago for tubercular laryngitis. Tubercle bacilli were reported to be present. When he passed under the care of a county tuberculosis officer repeated examinations failed to find them, and his Wassermann reaction was reported negative. He came under observation in June, 1917, with marked stridor, general infiltration of the larynx, ulceration of the cords, the glottic space reduced to a chink, no dysphagia and no enlarged glands, and the temperature was normal. The Wassermann reaction was positive; tubercle bacilli were found in his sputum. A low tracheotomy was done under cocaine, and he has since been treated with salvarsan and mercurial injections.

Both these patients will have to wear a tracheotomy tube permanently. A Durham tube, inserted as low as possible in the trachea, appears to me the best.

THE PRESIDENT: The first case would be a remarkably good cure if it were tubercular; the only unfortunate feature now is double abductor paralysis.

Dr. IRWIN MOORE: As is so well shown in this case, when a low

¹ *Vide Proc. Laryng. Soc. Lond.*, 1906, xiv, p. 4.

tracheotomy has been performed patients wear their tube without any discomfort—in fact they scarcely know that they are wearing a tube at all.

Dr. SMURTHWAITE: I have tried to elicit a movement of the arytenoid joints, but they do not seem to work at all: they are fixed. If the patient says “*e*,” the cords come together and are made more tense by the action of the internal tensors, but there is not the slightest movement in the abductor direction. I think the fixation is of a fibroid nature, due to the former tubercular or specific implication of the joints.

Dr. DONELAN: I have had under observation a case which has been examined by other members, in which fixation of the arytenoids was the earliest symptom, and there was difficulty in deciding whether or not it was tuberculous. The articulations on both sides were fixed for eighteen months, and only in the last month has the patient shown definite signs of tuberculosis. It appears to be a primary case. The present case I thought was one of fixation of the arytenoid articulation. I was uncertain as to the evidence of tuberculosis in the notes. Perhaps Sir StClair Thomson will tell us what was said at the meeting of the old Society.

Sir STCLAIR THOMSON (in reply): With regard to the first case, it was accepted by myself and by all who spoke as one of tuberculosis. In those days the Wassermann reaction had not been discovered, and we saw no other signs of syphilis. It was thought to be a rare case of tubercle of the larynx, which had not only healed spontaneously, but in doing so had produced stenosis, which is rare in my experience. The patient turned up after four years; in the interval the use of the Wassermann test had come in, and we found it was positive. From my own experience I think we were all wrong, and that though she may have tubercle in her lung, I think the condition really is syphilis, because it is rare to get tubercle in the larynx advanced enough to produce contraction in a patient who is not a good deal worse in health than this woman ever was. I view it as a false ankylosis. I do not think it could be a case of involvement of both recurrent laryngeal nerves or their centres, and that would not account for the interarytenoid space having disappeared, and the two arytenoids being so closely locked together. With regard to the second case, we must not rely implicitly on the pathologist, as many are inclined to do. We should trust to our own clinical acumen more than we do. The man tells me he has not been to a sanatorium, but has gone to live in his cottage. He has put on a lot of weight, and he comes back feeling well. We cannot now find any symptoms in his lungs, and the tubercle bacilli have disappeared. Dr. Emery made three examinations with the same result. Tracheotomy in both cases has been not only necessary, but I think that in both it will be permanent. I plead again for prompt and low tracheotomies. Mr. Hunter Tod's case was allowed to go on—not through any fault of Mr. Tod's—to dyspnoea and stridor before tracheotomy was done, and then tracheotomy was done on the same day as a fairly extensive operation on the larynx. Dr. Banks-Davis has handed round a picture of a child with a stud in its glottis, and that child had extreme dyspnoea; tracheotomy was performed, and yet the child died. That often happens in hospitals because people will not do tracheotomy in time, and the patient gets back-pressure on the heart.

Cyst of the Epiglottis of Unusual Size.—W. Jobson Horne.—The patient is a woman, aged twenty. No symptoms noticed before last August. Since then there has been a steadily increasing difficulty in

swallowing. Sufficient food can still be taken, but "a meal" cannot be made. The voice has become "deeper." The patient sleeps comfortably. The tumour springs from the left ary-epiglottic line and occupies the greater part of the brim of the larynx, so that the right ary-epiglottic ligament alone is visible. The absence of any material discomfort or inconvenience with so large a tumour in the brim of the larynx is remarkable.

A Larynx with a Cystic Tumour of the Epiglottis.—W. Jobson Horne.—The cystic tumour of the epiglottis gave rise to no symptoms during life. It was accidentally found at the *post-mortem* examination.

Dr. PERRY GOLDSMITH: I once had a comical experience in a case like this, which I showed at the Laryngological Section of the Toronto Medical Society. Everybody said they failed to see any tumour at all. I put my mirror on to look, and it had gone. The man then said something had "given way" when he was coming to the meeting, but he had said nothing about it.

Paralysis of the Left Vocal Cord in a Woman, aged Thirty-two.—W. H. Kelson.—I first saw the patient in August, 1916, when she complained of hoarseness. She gave the history that eleven months previously the left tonsil had been removed by a surgeon, and a month after this a gland, said to be tubercular, was removed from the neck on the same side. Immediately after this operation great hoarseness and difficulty in swallowing came on.

On examination the left vocal cord was found to be almost immobile, and the mucous membrane of the larynx when touched with a probe appeared somewhat insensitive. The voice was very husky. Since then the voice has somewhat improved and the difficulty in swallowing very much so. The patient, who before marriage was a nurse, says she has never had any lung trouble, nor children, nor miscarriages. She tells me she also had food regurgitation through the nose after the operation for removal of glands.

"Fibrosarcoma" of Nasopharynx. — Norman Patterson.—Patient, a boy, aged eighteen. Two years ago noticed small swelling in left cheek. In September, 1915, a portion of the swelling was removed at Eastbourne and reported on as a myxo-fibroma. He complains of long-standing obstruction on the left side of the nose, alteration in speech, pain in the left cheek and over the left eye. There is a firm swelling in the temporal fossa and another below the zygomatic arch; the zygoma itself lies in a hollow. The nasopharynx is occupied by a large firm swelling. The patient is evidently suffering from a growth which started in the nasopharynx, and has passed out through the pterygo-maxillary fissure into the zygomatic fossa and then upwards into the temporal fossa.

I propose to treat the case by radium passed into the substance of the tumour and X rays applied over the side of the face. Before treatment a portion will be removed for microscopic examination.

Endothelioma of the Post-nasal Space.—W. H. Jewell.—A girl, aged thirteen, first noticed something amiss four months ago on account of speaking through her nose; lumps (glands) in throat three months; intermittent headache and earache two months. The growth is attached

to the left lateral and posterior wall of the nasopharynx, bulging the soft palate forward; it is fairly firm, extends as high as the left choana, and bleeds readily on digital examination. The lymphatic glands of the left side of the neck are enlarged and extend nearly as low as the clavicle; in places they are firm and discrete.¹

Salivary Calculus.—Irwin Moore.—Patient, a male, aged fifty-six, attended hospital on November 16, 1917, complaining of a swelling on the right side of the neck under the angle of the jaw for one year, together with a swelling under the tongue, from which a month previously some watery fluid stained with blood had been discharged, followed by considerable diminution in the size of the neck swelling. A number of septic teeth had been recently removed from the neighbourhood of the swelling.

On examination: The right submaxillary gland was found to be enlarged, hard, but mobile. On the right-hand side of the floor of the mouth, about midway, in the position of Wharton's duct, an irregular, hard swelling was observed from which pus exuded in small quantity. A piece was removed for microscopic examination.

Report on Section.—"Sections of this tissue show considerable thickening of squamous epithelium with œdema and inflammation of the underlying tissues. There is certainly considerable hypertrophy of the epithelial processes, which dip into the submucosa, but in my opinion the condition is inflammatory, probably the result of local irritation, and not malignant. It is only fair to state, however, that in consultation the opinion has been expressed that this is an incipient squamous epithelioma" (Dr. Eastes' Laboratory).

Mr. TILLEY: I remember a similar case of salivary calculus where there was a swelling under the jaw, and when the calculus moved into the duct there was considerable pain, especially during meals. If the calculus ulcerates through the duct the condition becomes septic, and the induration with granulations produce an appearance like malignant disease. I suggest that the hardness towards the median line is due to a few crystals of the calculus blocking the opening of the duct.

Dr. IRWIN MOORE (in reply): When I first saw the case my diagnosis was salivary calculus, but, as Sir StClair Thomson has just pointed out, we are all somewhat inclined to assign too much importance to the pathologist's report. In this case Dr. Fletcher had expressed his opinion that the piece removed from the floor of the mouth was not malignant. Yet in consultation with others it was considered to be early squamous epithelioma. However, since sending in the notes for the agenda Dr. Ironside Bruce made a film skiagram, which shows a large calculus embedded in the sub-maxillary gland. There is a fistula in Wharton's duct which is discharging freely, and accounts for the swelling of the gland having subsided since I saw the case a week ago. Professor Shattock reports that the section of the growth examined by him is not malignant.

Postscript.—On December 11, under an anæsthetic, the calculus was located in Wharton's duct, close to the submaxillary gland, and was removed by incision. It measured 10 by 7 mm.

¹ Shortly after this child was shown she developed cerebral vomiting, followed by blindness of the left eye, then of the right, and ending in coma and death two months later.

Malignant Disease of the Larynx.—**Irwin Moore.**—Patient, a female, aged fifty-eight, when first seen on October 4, 1917, complained of hoarseness of the voice for one year following a severe cold, accompanied the last six months by cough, and for three months by blood-stained sputum. There has been some difficulty in breathing for four months. On admission to hospital on October 13 considerable inspiratory stridor was present, which necessitated tracheotomy, and this was performed by Mr. Macnaughton-Jones. There is no history of tuberculosis nor of syphilis. The Wassermann reaction is negative. A few enlarged glands are present on both sides of the neck. There is no difficulty in swallowing, but patient has wasted considerably, her former weight having been 10 st. Examination of the larynx shows marked stenosis caused by infiltration and fixation of the soft parts on the right side. The entire larynx is distinctly congested. The arytenoids are not enlarged.

Examination of the lungs by Dr. Halls Dally on November 24 showed that the percussion note was impaired above the left clavicle in front, and in the left supraspinous fossa behind, accompanied by moist sounds, which, however, were difficult to differentiate from the sounds caused by the presence of the tracheotomy tube. There is considerable difficulty in coming to any definite conclusion as to the condition of the lungs. Examination of sputum is negative.

Removal of Foreign Body Impacted in the Œsophagus.—**G. C. Cathcart.**—Mrs. S——, aged forty-five. She came to me on October 27 and gave the following history. At lunch she had just taken a piece of duck when someone spoke to her. She hastily gulped it down, found it too big, and tried to bring it back into the mouth, but failed; she felt choked, and tried to drink some water; she then sent for a doctor, who passed a rubber tube. She was apparently relieved for a time, but as the day wore on began to get more and more uncomfortable. When I saw her at 8.30 p.m. she complained of great pain in the centre of the breast-bone, with increasing difficulty of breathing and inability to swallow anything. She was pale and haggard-looking and in a cold sweat, and evidently in great distress. As she was certain there was no bone in the piece she swallowed, I did not have her X-rayed but sent her at once into a nursing home. Under a general anaesthetic I first passed a tube into the larynx and found it clear; then I passed the œsophagoscope, and at a distance of 8 in. a large, dark greenish mass was seen. With the forceps I had I only succeeded in bringing away pieces of the meat. As I did not have a pair of Dr. Irwin Moore's forceps, I asked him to come and bring his. He then passed them and at once brought up a large mass with the bone attached. Fortunately the sharp point of the bone was turned down, otherwise it would have scratched the œsophageal wall as it was coming up, but the patient suffered no ill-effects.

This case shows the advisability of always having an X-ray photograph taken, and also the need of every œsophagoscopist having a pair of Irwin Moore's forceps as an essential part of his armamentarium, as one never knows when they may not be wanted. The bone and a drawing of the pieces of duck are shown. The bone measured 30 mm. ($1\frac{3}{4}$ in. in length) by 13 mm. ($\frac{1}{2}$ in. in breadth), and the weight of the meat attached to it was $\frac{1}{4}$ oz.

Case for Diagnosis.—**G. C. Cathcart.**—Mr. J. S—— was brought to me on October 27, 1917, by Dr. N. Turner, complaining of persistent

hoarseness. He is aged sixty-seven. He was staying at Ramsgate in April, 1916, when an explosion took place at an ice factory. He went to assist the firemen, and in a short time had a choking feeling, and had a pain in his throat and chest, owing to the escape of ammonia. The pain continued for a few days after his return to London. In December he had a bad cold and a return of the same pain that he had had when helping after the explosion; this lasted for a few days. Some months later he found he was getting hoarse and had difficulty in speaking. On laryngoscopic examination the whole larynx was seen to be inflamed, and there was a great deal of swelling in the interarytenoid space, over the arytenoids and on the cords, and there was what looked like heaped-up necrotic tissue on both cords and in the arytenoid space. There was evidently some perichondritis of the arytenoid cartilages, as they were partly fixed, and there was only a small space left for breathing, which caused him to have stridor at night.

I removed a piece of the uvula, which was causing him considerable irritation and was very much elongated. Two days later I did a low tracheotomy. The patient has now been wearing the tube for a fortnight, and during that time has not used his voice at all. He has still a great deal of swelling in the interarytenoid space and over the arytenoid cartilages, but no necrotic tissue is to be seen. I have never seen a case quite like this before, and should be very glad to have the opinion of the members in regard to it.

MR. TILLEY: I think it is a tuberculous gland. There is much œdema of one glosso-epiglottic fossa, and there is much ulceration on the laryngeal aspect of the epiglottis. The laryngeal appearances are in favour of tuberculosis also, although there are no physical signs in his chest. I think there may be an old tubercular focus in the apex of one or both lungs, and that the laryngeal mucous membrane has been infected.

SIR STCLAIRE THOMSON: There is no doubt about it being tuberculosis, but it is worthy of notice that laryngeal tuberculosis in the elderly is a very protean affair, and is apt to deceive people—that is to say, it does not follow the routine symptoms. It often simulates syphilis, or malignant disease, and it is commonly found in the elderly in what is regarded as a primary form. It is also apt to be acute and to kill its victims quickly. That seems rather a contradiction, because in middle age tubercle of the larynx is often a mild condition, but tubercle of the larynx in the senile is apt to be very severe.

Tuberculosis of Larynx.—W. Jobson Horne.—Patient, a discharged soldier, aged twenty-two. He joined up in March, 1916, and was in France in December, 1916. He was invalided out in May, 1917. He has had sore throat and dysphagia for several months, but not before the war. There is no family history of tuberculosis. No sputum is available. The thorax has not at present been examined. Larynx: Considerable œdema and infiltration of epiglottis and arytenoid region.

In the first place treatment by scarification is proposed.

ABSTRACTS.

Abstracts Editor—W. DOUGLAS HARMER, 9, Park Crescent, London, W.1

Authors of Original Communications on Oto-laryngology in other Journals are invited to send a copy, or two reprints, to the JOURNAL OF LARYNGOLOGY. If they are willing, at the same time, to submit their own abstract (in English, French, Italian or German) it will be welcomed.

PHARYNX.

Tonsillectomy in Myositis and Arthritis.—H. I. Lillie and H. R. Lyons.

"*Jour. Amer. Med. Assoc.*," April 26, 1919.

In this paper the results of 200 consecutive cases are given. Out of 87 patients of ages up to thirty years, 81.6 per cent. were improved. Out of 113 patients of ages over thirty years, 77.7 per cent. were improved. Twelve per cent. had acute exacerbations after tonsillectomy. Most of these subsided later, but in five instances there was no improvement. The immediate result in cases with enlarged joints was very good. As a rule the swelling went down immediately, and the pain went away. Most of the patients who did not improve were of the very chronic type, and showed marked bony changes in X-ray photographs. Out of a group of twenty-eight selected cases with marked chronic joint involvement, those that showed no changes with the X rays were improved. The patients of over fifty years of age did not as a rule improve much.

In the whole series of 200 cases, only 57.7 per cent. had any history of tonsillitis, while in others there was very little sign of any septic process in the tonsils.

The authors' conclusions are as follows:

"1. It is justifiable to advise a tonsillectomy in every frank case of myositis or arthritis.

"2. A marked improvement may be assured from tonsillectomy alone in 79 per cent. of all cases.

"3. It is necessary to remove all possibility of dental sepsis: by so doing a larger percentage of patients will be improved.

"4. The duration of the myositis or arthritis is a factor in the ultimate results, although benefit and even complete cure is obtained in some long-standing cases.

"5. Forty per cent. of the patients with chronic myositis or arthritis who are invalids will respond favourably to tonsillectomy.

"6. The size of a tonsil has no bearing on its possibility as a focus of infection. A careful expression of the tonsillar crypts and a history of throat trouble, associated or not associated with the myositis or arthritis, is essential in the diagnosis.

"7. An absence of history of a diseased tonsil in no way eliminates the organ as a focus of infection.

"8. A clean tonsillectomy, with the removal of the plica tonsillaris, is necessary in every case."

J. K. Milne Dickie.

Acute Retropharyngeal Abscesses in Children.—J. M. Brown. "*The Laryngoscope*," January, 1919, p. 9.

The vast majority of cases are due to streptococci. Ninety-six per cent. of these abscesses appear in children under six years of age: 50 per cent.

occur between the ages of six and twelve months. Cases usually have a history of nasopharyngeal infection. The primary lesion may be entirely recovered from, or it may merge into the symptoms due to the retro-pharyngeal abscess. When the abscess forms there is a return of, or an increase in, the fever. The local symptoms are interference with respiration and deglutition. Many cases are diagnosed as croup as the dyspnoea is inspiratory. The child changes the position of its head frequently in the hope that it may ease its breathing. In any child having trouble with respiration or deglutition one should immediately examine the pharynx, and, if unable to see the throat, one should feel with the forefinger. In one of Brown's cases the child was undoubtedly choked to death by the rupturing of the abscess. Brown does not agree with Pierson, who believes every case ought to be opened and drained externally behind the sterno-mastoid. Brown prefers to have the child lying down, head on one side and slightly lower than the feet, thus allowing pus to run out of the mouth. With the aid of an ordinary tongue-depressor he inserts a pair of fairly sharp dressing forceps into the abscess and widens the blades as he withdraws them. A child usually makes a rapid recovery. Five case-histories are recorded. *J. S. Fraser.*

The Surgical Treatment of Peritonsillar Abscess.—Thomas H. Cates.
"The Laryngoscope," October, 1918, p. 764.

Cates asks, Shall we follow the common procedure of sticking a knife in that part of the swelling which appears most prominent, and then repeat it the following day, and so on until relief is obtained? The abscess forms between the tonsil and the pillars of the fauces and the superior constrictor muscle. Pus will first be found somewhere in a space bounded by these tissues, either just external to the tonsil or in the anterior, posterior or superior tonsillar fossa. In severe cases the swelling may be so great and the landmarks so obscured that it is only practicable to open through the soft palate. But if we can choose the point to open, there is no doubt that in most cases the immediate peritonsillar region is the logical point to select, and that this region is most easily and directly entered somewhere between the tonsil and pillars, whether above or to the side of the tonsil. Under local anæsthesia, Cates inserts a semi-sharp tonsil dissector, or Freer's submucous elevator, between the anterior pillar and the tonsil, working it outward and slightly backward until it has reached the outer aspect of the tonsil, and then pushing it further backward and somewhat upward between the tonsil and the superior constrictor muscle. No other instrument is used except a tongue depressor. If care is taken to keep the dissector in close contact with the tonsil during the procedure, it will usually pass between the capsule of the tonsil and the muscle without difficulty. Should pus not be encountered directly, the instrument can be manipulated further upward and backward. *J. S. Fraser.*

Trichloracetic Acid in Vincent's Angina.—Thomas J. Gallaher. "The Laryngoscope," July, 1918, p. 551.

Gallaher has no hesitation in pronouncing trichloracetic acid a specific in this disease. It should be applied pure, as follows: A small applicator is wound with cotton and dipped in pure liquid acid and carefully applied to the entire area affected. In the tonsils the acid should be carried on a thin applicator to the depth of each crypt involved. After the parts have turned white the acid should be neutralised by the application of a saturated solution of sodium bicarbonate. *J. S. Fraser.*

NOSE.

Benign Neoplasms of the Nasal Septum.—G. W. Mosher. "Annals of Otolaryngology," xxvii, p. 981.

In 1900 Hasslauer found less than 300 cases reported, of which only 115 were true new-growths and 57 of these were angiomas. The remaining 58 were—papillomata 35, fibromata 9, myxomata 6, chondromata 4, adenomata 4. Exostosis was apparently ruled out. Benign growths usually appear on the septum, especially at its lower part. There are no diagnostic symptoms, but inspection and the probe usually render the determination of the character of the growth simple.

The author describes the case of a woman, aged twenty-five, from whom he removed an adenoma growing in the right naris from low down on the septum. The tumour was about $1\frac{1}{2}$ in. long and $1\frac{1}{2}$ in. in vertical measurement. A bibliography of 34 cases is appended.

Macleod Yearsley.

Report of a Case of Osteoma of the Frontal Sinus of Large Size: Operation and Recovery.—J. F. Barnhill. "Annals of Otolaryngology," xxvii, p. 1239.

The patient was a girl, aged sixteen. Operation under careful aseptic technique found the tumour lying under the periosteum, the anterior wall of the sinus having been absorbed. The remainder of the anterior sinus wall was removed, and the tumour prised out with elevators. Recovery was uneventful. The osteoma weighed 600 gr.

Macleod Yearsley.

Adeno-carcinoma of the Nose.—Lee M. Hurd. "The Laryngoscope," October, 1918, p. 757.

Hurd reports four cases of this condition. Case 1: Male, aged fifty-nine, first seen in 1905, with history of swelling of right side of face and hard palate of one year's duration and of a small alveolar swelling of ten years' duration. Right nose blocked. Inner, anterior and lower antral walls absorbed. The superior maxilla was excised *in toto*. In June, 1908, the growth recurred on the hard palate and half of the left alveolar process and hard palate were removed. In March, 1910, Hurd removed the contents of the orbit. In July, 1914, much involvement in orbit and soft palate. The patient was then lost sight of. Apparently there were no metastases. Case 2: Male, aged sixty-five. Ten years ago had first operation for nasal polyps and has had a number of such operations since. Twenty months ago rapid enlargement of the cervical glands at angle of jaw on both sides. Present condition—severe headaches, complete nasal obstruction, mucoid nasal discharge streaked with blood. Left eye shows paralysis of third and fourth nerves; cachexia. A gland was excised and found infiltrated throughout with cells, which suggest that they are metastatic deposits of adeno-carcinoma. Hurd refused to operate, and under another surgeon the patient died on the table from hæmorrhage. Case 3: Male, aged forty-two. March, 1911: Partial obstruction, mucoid discharge, frequent bleeding. Left ethmoid filled with a soft, purplish growth. Report: "Adenoma." Operation: Tied external carotid. The entire contents of antrum, frontal, ethmoids, sphenoid and nose were removed, only leaving the mucosa of the vestibule. There was no evidence of growth except in the ethmoidal cells. September, 1911: Same condition was found in the right ethmoids. The original incision was reopened and the nasal septum entirely removed,

and all of the contents of the right nasal cavity and sinuses removed except the frontal sinus. November, 1912: Growth recurred. April, 1914: Diathermy tried, with some improvement. March, 1917: Radium applied once a week. May, 1918: The mass at root of nose slowly increasing. Case 4: Male, aged sixty-seven, seen April, 1915. Seven years ago had polyps removed. Left ethmoidal region filled with polyps. Hurd removed polyps and ethmoidal labyrinth and discovered soft, yellow and practically bloodless tissue. Radical operation urged, but refused. Patient died twenty months later.

J. S. Fraser.

Multiple Osteoma of the Nasal Accessory Sinuses: Report on a Case Complicated by Syphilis: Operation: Autopsy.—W. L. Culbert.
“Annals of Otolaryngology,” xxvii, p. 1203.

Gives a fairly full account of the subject and summarises the author's opinions thus: (a) There is probably an original congenital tendency in all cases of osteoma of the nasal accessory cavities. (b) Such tendencies, unless irritated, probably remain quiescent. (c) Conditions likely to activate osteomatous growths are: (1) The neoformative activity in the frontal regions during adolescence. (2) External traumatism. (3) Endogenous irritations: inflammations and infections (influenza, etc.). (4) Constitutional maladies, especially syphilis. (5) Combinations of all these causes. The case reported was that of an Italian chauffeur, aged forty-three. Duration, seven years. Wassermann showed 4+. An operation was done for removal, and the frontal sinus entered. Pus was met in its recesses, behind the tumour. As the tumour had eroded the inner table the dura was torn. As an X-ray examination showed that the growth had invaded the cranial cavity a second operation was performed. The right middle turbinate was removed and more osteoma found in the ethmoid. Two months later death occurred some twenty-four hours after a sudden attack of unconsciousness. At the autopsy an abscess was found in each frontal lobe.

A useful bibliography is attached.

Macleod Yearsley.

Fatal Epistaxis following Varicella.—Charles C. Jones. “The Laryngoscope,” February, 1919, p. 101.

Male, aged twenty-five, admitted to hospital three weeks before for chickenpox, which had run a normal course, and transferred to the otological service on January 29, 1918. For six days he had had a daily attack of epistaxis, easily controlled by adrenalin spray. Two days before being transferred he had a severe pain in his left ear, followed in a few hours by profuse bloody discharge. No history of any bleeders in the family and no previous epistaxis. Wassermann negative, urine normal. Temperature 100° F., pulse 96. Tenderness over the mastoid. Both nares filled with crusts of dried blood, and when these were removed there was such a severe hæmorrhage that it was necessary to pack both the anterior and the posterior nares. January 30: Packing removed but had to be replaced immediately. Twenty c.c. of normal horse-serum given subcutaneously. January 31: Pain in the right ear, with bulging of the tympanic membrane. Paracentesis. Epistaxis continued. More normal horse-serum given. Thromboplasin applied to the nasal mucous membrane by atomiser. February 1: Purulent discharge from both ears. February 2: Nasal hæmorrhage continued.

Patient delirious. Solution of acacia in normal salt solution given intravenously. Attempts to get blood for a transfusion were unsuccessful. Death on February 5. Necropsy: A large amount of pus and blood-clot was found in the nasal accessory sinuses. The mastoid cells and antrum were filled with pus on both sides. Jones remarks that packing in a case of this character is useless, because the blood passes through it.

J. S. Fraser.

LARYNX.

Some Original Methods of Treatment of Laryngeal Stenosis.—S. Iglauer. "Annals of Otology," xxvii, p. 1233.

These are (1) dilatation by means of a rubber tube doubled upon itself, based upon the effect on cicatricial tissue of continuous elastic pressure. (2) Insertion of a single rubber tube from below. (3) Intubation by traction. By means of strings attached to the lower end of the intubation tube rubber tubes can be passed over the latter.

Macleod Yearsley.

Intubation for Angioma of the Larynx.—John J. Levbarg. "The Laryngoscope," December, 1918, p. 867.

Levbarg reports the case of a baby boy, aged ten weeks, suffering from severe dyspnoea and stridor. At birth the child had angiomatous spots on the left temporal region, the hard palate, uvula and neck. The laryngeal tumour spread gradually every day. On admission the child was struggling for air, there was marked retraction of the supra-clavicular space and upper part of the abdomen, and severe cyanosis. Direct laryngoscopy by Glogau revealed the tumour spreading downward. After intubation the dyspnoea gradually diminished. X-ray treatment was given that same day. During the following ten days the intubation tube had to be replaced or changed on numerous occasions. The angioma diminished in size and the child was discharged.

J. S. Fraser.

Treatment of Laryngeal Stenosis by Corking the Tracheostomic Cannula.—Chevalier Jackson. "The Laryngoscope," January, 1919, p. 1.

Jackson's method consists in corking the cannula with a specially shaped rubber cork that does not completely occlude the cannula. The amount of leakage past the cork can be regulated so as to force the patient to make strong inspiratory efforts to get sufficient air. The effect of this is to increase the lumen of the larynx. The corks are made by grinding pure rubber cord of suitable size on a high-speed emery wheel. A foot-power polishing lathe with such a wheel will answer nearly as well, *e.g.* that used by the dentist, the jeweller or surgical instrument maker. Any properly fitted cannula should permit the patient to wear the "one-third" cork, if any appreciable amount of air is going through the larynx. When this can be worn with ease, the "half cork" should be substituted. Next the "three-quarter cork" should be tried, and then the complete cork inserted. When the patient can sleep quietly with the complete cork in place, he is ready for decannulation. In old cicatricial cases a few weeks or a few months may be required.

J. S. Fraser.

The Training of the Speech Instructor.—Walter B. Swift. "The Laryngoscope," December, 1918, p. 869.

Swift states that speech instruction is spreading rapidly through the schools of the country and teachers are asking how they may best fit themselves for the work. The answer must be determined by the plans of the applicant. If he wishes merely to acquire that minimum of information which fits one to do corrective work in the public schools the answer is simple enough. If he wishes to become a speech expert a vastly different answer must be made. The speech expert deals with theory; the speech teacher in the public schools is concerned with practice. The true speech expert must be a master of general medicine, laryngology, neurology and psychiatry. A close knowledge of dramatic art or vocal expression is also necessary. Finally, he must have had training in psychology, laboratory methods and scientific procedure. Only a few such past-masters are needed in any one generation. Only those who have had such a training are fitted to instruct the teachers who are to be responsible for the speech instruction to be given in public schools.

The public school teacher, on the other hand, only requires a course of lectures (one hour three days a week for one month) and attendance at the clinic which is conducted in connection with this course. Stuttering, phonetics and the treatment of mental defectives must be dealt with.

J. S. Fraser.

Report of a Case of Steel in the Larynx.—F. Allport and B. Wilson. "Journ. Amer. Med. Assoc.," May 3, 1919.

A fragment of steel struck the patient in the neck below the point of the chin. He was taken to hospital, where the wound was sutured. He returned to work. Since the accident he could not talk above a whisper.

On examination several weeks later there was a slight prominence on the left side of the thyroid cartilage. It was solid to the touch and moved with the larynx. The left vocal cord was immobile, and the larynx was moderately inflamed. A radiogram showed a splinter of metal $1\frac{1}{2}$ inches long lying antero-posteriorly and penetrating the thyroid cartilage. It was removed under local anæsthesia. Soon after the operation the patient's voice had returned, but was very hoarse, and at the end of a week the voice was rough but almost normal. The cords now had a normal appearance.

The writers think that the foreign body had probably not actually penetrated the laryngeal cavity.

J. K. Milne Dickie.

MISCELLANEOUS.

Surgical Diathermy.—E. P. Cumberbatch. "Proceedings of the Royal Society of Medicine," July, 1918 (Section of Electro-therapeutics), p. 115.

The object of this paper was to invite a discussion on the methods of performing diathermy, the complications and the immediate and remote results.

Patients do not suffer from surgical shock after diathermic cautery. On the day after the operation there is usually a rise of temperature, but it rarely lasts for more than a day and the patient has little discomfort.

On the third day the patients are usually able to get up and walk about without bad effects even after the removal of massive growths from the throat. The patients are able to swallow fluids on the day after the operation and to eat solid food early. The part treated by diathermy rarely becomes cedematous. A copious discharge of lymph occurs and may last for several days. Hæmorrhage is to be feared when the coagulation has extended to the region of an artery. Septic broncho-pneumonia has occurred in very few cases, and is less frequent than after cutting operations on growths of the mouth and pharynx. Edema of the glottis is likely to occur when diathermy is performed for growths in the region of the larynx and tracheotomy may be necessary during the operation or later.

One case of malignant disease of the tonsil, tongue and mucous membrane of the upper and lower jaw was treated with diathermy in November, 1911. The operation was repeated for recurrent growths in July, 1912, in June, July, October and December, 1913, and again in March, 1914. The patient died in July, 1914. He had been free from discomfort up to the last three months of his life. Other patients have survived for shorter periods, but in nearly all there was freedom for a considerable time from symptoms such as expectoration, salivation, pain and discharge in the throat. All the cases mentioned were surgically inoperable.

Diathermy is an excellent method of treatment for certain non-malignant growths. A nasopharyngeal fibroma had been removed surgically, but recurred and was treated by diathermic canterry. This was repeated two months later and again after four months. The growth was effectually destroyed without hæmorrhage.

Archer Ryland.

The Pathogenesis of Bronchial Asthma.—Wolff Freudenthal. "The Laryngoscope," November, 1918, p. 781.

Freudenthal believes that an attack of asthma is brought about, not by spasm of the constrictor fibres of the bronchioles coming from the vagus, but rather by a paralysis of the dilator fibres. If we suppose that the asthmatic paroxysm sets in with a paralysis of the dilator fibres, we have to assume that a constriction of the bronchioli must follow immediately in the same manner as in facial paralysis, where the face is drawn to the non-affected side; *cf.* also bilateral abductor paralysis of the larynx. The existence of constrictor fibres has been proven by Einthoven and Baer, and the existence of broncho-dilator fibres running side by side with the former has been demonstrated by Dixon and Brodie. The vagus may be held responsible in either case. Clinicians, seeing the almost immediate effect of adrenalin in an acute attack of asthma, were of the opinion that it caused a dilatation of the bronchioles. Golla and Symes, however, found that adrenalin usually produces constriction. When the bronchioles, however, were initially constricted by other drugs, the normal effect of adrenalin was reversed, and bronchial dilatation produced. In the function of respiration, both the respiratory centre and the autonomous nervous system participate, so that by a sort of self-regulation the vagus acts like an antagonist to the automatism of the centre. It may be concluded that paralysis of the sympathetic and stimulation of the vagus show the same symptoms, and are closely related, not only symptomatically, but also ætiologically. We are justified in speaking of the asthmatic paroxysm as due either to an irritation of the vagus or to a paralysis of the sympathetic. The writer is inclined

towards the latter theory. As regards treatment, the endobronchial method has given the writer much better results than any other measure.

J. S. Fraser.

Asthma from a Wider Aspect.—Harry L. Pollock. "The Laryngoscope," July, 1918, p. 543.

Pollock holds that the treatment of asthma belongs primarily to the rhino-laryngologist, but is convinced that the underlying aetiological factors can be traced to a disharmony of the ductless glands. That the spasm of the bronchi is due to an irritation or stimulation of the vagi is now also accepted by nearly everyone. Many cases are associated with some pathological conditions of the upper respiratory tract. After having these conditions cleared up, all cases are benefited to a greater or less degree. Zueblin states that the vagal centre is influenced by impulses that depend on the secretion of the posterior part of the pituitary body. This complex organ containing many different nerve-cells is associated with co-ordinate involuntary motor impulses. The pituitary vagal centre is the terminal of sensory impulses from the nose. Cyon's experiments demonstrate that the destruction of the pituitary body completely destroys the reflex sensibility of the nasal mucosa. The predisposing cause of bronchial asthma is a hypersensitiveness in the posterior pituitary body, which may arise from irritation of the bronchial mucous membrane by (1) substances contained in the inhaled air, or (2) from toxic products of imperfect catabolism. Under normal conditions the afferent impulses from the bronchi evoke just sufficient efferent motor and secretory impulses to create periodical contractions of the bronchi and secretion of mucus. When, however, a hypersensitiveness of the vagal centre exists, excessively violent stimuli are sent in the direction of the bronchial muscles. Vaughan has shown that split protein poisoning is the causative agent of many unexplained phenomena. The poisons may act as an exciting factor in asthma by causing an irritation of the posterior lobe of the pituitary body. Chandler Walker determines the exciting cause by subjecting the patient to vaccination with various substances and ascertaining the one to which the patient reacts. In those cases in which there is no reaction to any of the proteins, pollen or dust from animals, he tests the blood for agglutination with the *Staphylococcus pyogenes albus*. If such cases show agglutination he vaccinates them with a stock vaccine. If it does not agglutinate, he isolates a diphtheroid bacillus from the sputum and uses a vaccine of this. These agents, however, are only exciting and not predisposing factors. Another partially successful line of treatment is that suggested by Ephraim, and consists of endobronchial applications of medicaments. Ephraim found that novocaine-adrenalin solution gave excellent results. In many cases only one treatment was necessary to obtain from six to nine months' relief. Kahn and Emsinger have tried injection of autogenous defibrinated blood. Their theory is based on the supposition that the attack is due to anaphylaxis. Pollock gives a warning against this line of treatment. A hypodermic injection of adrenalin (10 to 15 mm.) immediately stops an attack of asthma. If given with equal amount of normal salt solution the action is more efficacious and of longer duration. It is bad practice to place adrenalin and a hypodermic syringe at the patient's disposal, as they very rapidly acquire the "adrenalin habit," which is more difficult to combat than is the morphine habit.

J. S. Fraser.

Effects of New Toxic Gases, etc.—Grivot and Got. "Revue de Laryngologie," March 31, 1919.

In the early stages there is great hoarseness. About the second day there is diffuse redness and swelling of the mucous membrane. On the third or fourth day superficial ulceration occurs. The patches are ivory white, and usually disappear in two or three days. In the larynx the ulcers are usually symmetrical and on the free edges of the cords. In addition to this there is much muscular paresis of the cords. There is usually a considerable functional element. The hoarseness is very persistent and lasts for weeks.

J. K. Milne Dickie.

Absolute Repose of the Jaws as a Treatment for Traumatic Parotid Salivary Fistulæ.—P. Pietri. "Annals of Otology," xxvii, p. 1333.

Based on thirty-eight cases. In asking the question—Can we say that this way of treating parotid salivary fistulæ by an absolute repose of the jaws is infallible? the author replies that this is far from his opinion, in spite of the uniform success up to the present time, but it is so harmless, so easy to employ, and the results obtained are so encouraging that he believes it is worthy of trial. The apparatus used is a sewed bandage, which prevents opening the mouth. A fixation appliance for the teeth is used where fracture of the jaw is present.

Macleod Yearsley.

EAR.

The Value of Ear Examination to the Neurologist.—Isaac H. Jones. "Annals of Otology," xxvii, p. 881.

By ear-test the neurologist can obtain additional data as to whether he is dealing "with a lesion of the internal ear, of the brain-stem, or cerebellum." It is essential therefore that the physician should keep in mind the various pathways constituting the vestibular apparatus, and that he should be accurate and painstaking in the technique of his ear examination. The differential diagnosis between peripheral and central lesions by ear-tests depends on certain general principles. Impairment of function of cochlear and kinetostatic labyrinth, history or presence of tinnitus, proportionate impairment of responses from the horizontal and vertical canals, and proportionate impairment of nystagmus and vertigo suggest a peripheral lesion of labyrinth or eighth nerve. A central lesion, on the other hand, is suggested by normal cochlea and canals, normal responses from horizontal, but absent responses from vertical canals or *vice versa*, normal vertigo, but impaired nystagmus from the horizontal canal, or *vice versa*, normal vertigo, but impaired nystagmus from vertical canals, or *vice versa*, together with other phenomena. The paper requires to be read *in extenso*.

Macleod Yearsley.

Spontaneous Recovery from Lateral Sinus Thrombosis.—Richmond McKinney. "The Laryngoscope," January, 1919, p. 13.

Boy, aged eleven. For two months right ear had discharged off and on and he had had a severe earache for two days. Examination showed a median perforation of the membrana: temperature, 100° F.; slight mastoid tenderness. Boracic syringing and ice-bag to the ear.

Two days later, temperature 104° F. Blood examination: polynuclear percentage of 92. Paracentesis performed. Temperature reached 105° F. next day: no rigors or sweats. A simple mastoid operation showed a little pus in the antrum. Next morning temperature again rose to 105° F., pulse 120, and the child complained of pain in the right shoulder. Hectic fever continued in spite of evacuation of two small metastatic abscesses. A blood-culture was negative as to bacteria. Second operation (twelve days after first one). The sinus-wall was greatly thickened and greyish. It was determined to wait a few hours before opening the sinus. The temperature gradually settled down and the patient made an uneventful recovery.

J. S. Fraser.

Bilateral Acute Suppurative Otitis Media with Symptoms of Sinus Thrombosis.—**Otis D. Stickney.** "The Laryngoscope," February, 1919, p. 90

Stickney reports the case of a female, aged fifty-two, who on June 24 developed pain in both ears following sore throat. Spontaneous perforation of both drumheads occurred within twenty-four hours, followed by profuse discharge. On July 3 the discharge from the right ear stopped. The right membrane was red and bulging, the mastoid tender, and temperature 102° F. Paracentesis. The left ear became painful, and the membrane was freely incised. On July 7 temperature was 102.8° F. and there was pain in the left ear. On July 8 pain in right arm and left ankle. On July 10 three chills; pain in back of neck. Patient irritable, restless and impatient: temperature 101.2° F. Stickney advised bilateral mastoid operation and exposure of both lateral sinuses. Both mastoids were filled with pus. Sinus walls looked normal. Stickney aspirated each sinus in an upward and downward direction. The blood withdrawn subsequently proved negative on culture. July 13 to July 16 temperature varied from 100° to 102° F. Incision of the right elbow liberated at least an ounce of pus (streptococcus, which was also the infecting organism in both ears). On July 23, 50 c.c. of the antistreptococic serum were given intravenously. A few hours later the patient had a chill and a rise of temperature to 103.6° F. July 24 to July 27 marked urticaria. July 27 to August 3 temperature 100° to 103.4° F., nausea and vomiting. Stickney felt that the patient had sinus thrombosis, but was unable to decide which side to attack. On August 4 he reopened the right mastoid and incised the right lateral sinus. Bleeding less free than normal, but no thrombus was discovered. The internal jugular vein was exposed, its branches ligated, and a portion resected. Left lateral sinus also exposed and incised; hæmorrhage very profuse. No blood was now passing through either lateral sinus, but the patient did not manifest any marked signs of increased intra-cranial pressure. On August 12 temperature was normal; packing removed. From this time she made uninterrupted recovery. Stickney thinks too much dependence should not be placed upon blood examinations. The eye-grounds were examined several times, but nothing abnormal was observed.

J. S. Fraser.

Tubal Function and Aviation.—**G. Gradenigo.** "Arch. Ital. di Otol.," xxx, 1, January, 1919.

Modern aviators are subjected to very rapid changes of barometric pressure in rising and descending. Thus one can descend from 6000 metres in a few minutes with a difference in atmospheric pressure of 360 to 760 mm. of mercury.

Two colleagues were experimenting with an air-tight decompression chamber, when by an error they were decompressed in a few seconds to a degree corresponding with an altitude of 6000 m. In response to their signals of alarm the pressure was restored to normal again, also in a few seconds. Both victims suffered from violent pain in the ears and temporal region, grave asthenia, nystagmus, vertigo, subjective noises, and hæmorrhage from mouth and nose. In both there was great hyperæmia of the drum-membranes, with petechial hæmorrhages, and also effusion into the middle ears. In one a perforation was caused.

The writer had opportunity of examining aviators whose Eustachian tubes were pervious immediately after descents of about 6000 metres, and in most there was no change in the ears. In a few, however, there was slight transitory dulness of hearing and slight hyperæmia of the drum. Subjective noises were attributed to the roaring of the engine.

Similarly experiments in the decompression chamber showed that if the tube is open there is no damage to the ear from rapid changes of atmospheric pressure.

The case was very different when the tube was not pervious. Acute pain in the ear was caused by changes of pressure in spite of movements of deglutition. In those cases examination showed marked redness and indrawing of the membrane with minute hæmorrhages in the drum membrane itself. There was diminution of hearing and vestibular symptoms which passed off only after a few days.

Gradenigo comes to the conclusion that for purposes of aviation the best means of determining whether the tube is patent is by the use of the decompression chamber. By this one can also determine the effect of respiration and the circulation.

J. K. Milne Dickie.

The "Feel of the Airship."—**Eugene R. Lewis and Henry Horn.** "The Laryngoscope," February, 1919, p. 65.

In order to appreciate the part that the ear mechanism plays in aviation, all that any physician need do is to take a flight in an aeroplane. As you guide an aeroplane in a straight flight, your incessant effort is to correct minute deviations from the level position by tiny movements of the joy-stick. This sense of the "detection of movement" is what the experienced aviator calls the "feel of the airship." It is that sense which distinguishes the born flier from the mechanical flier, who is forced to rely upon his sight. Some men give evidence of possessing this sense-complex during the first one or two hours of instruction; others never acquire it. Motion-sense is dependent upon information derived from (1) muscle sense, (2) sight, (3) vestibular sense, and (4) tactile sense. Lewis and Horn tried by elimination of any two of the first three factors to estimate the value of the third. Tactile sense may be ignored. Blindfolding eliminates sight; the use of deaf-mutes with destroyed vestibular apparatus eliminates the vestibular sense; blindfolding these deaf-mutes eliminates sight and vestibular sense, leaving deep sensibility as the remaining factor. Tilting perception: It has been shown by various observers, experimenting upon thousands of aviation applicants, that there exists a very clear appreciation of tilting. Fifteen normal people were selected from the surgeons in the Medical Research Laboratory. The subjects were blindfolded, were then taken up in the plane, and manœuvres were carried out. Experiments were conducted only during ideal weather. The angles were checked by a clinometer. The intercommunicating 'phone system was used. As soon as a proper

altitude was reached, where the air was smooth, the subject blindfolded himself, and as soon as he was able to appreciate whether he was going up or down, or banking to the left or to the right, he would so report to the pilot. The downward angle was detected in every case more accurately than the upward angle. One of the beginners was unable to detect the upward angle even to 70 degrees. Subsequent examination showed that this man's vestibular reactions were very much subnormal, as evidenced by ten seconds' duration of "after-nystagmus," no past-pointing after turning, and only very slight tendency to fall. Banks to the left were more accurately detected by the subjects than similar banks to the right.

Several deaf-mutes were the subjects of these experiments. Two showed normal vestibular function, four showed absolute lack of vestibular function. Those with absolutely no vestibular function showed total inability to detect changes in the series of movements of the 'plane. They had nothing to inform them except their deep sensibility and tactile sense. Many of them admitted that they were entirely "in the dark," and felt as if they must tear the bandage from their eyes—in other words, they were completely "lost" in space. These aeroplane experiments should correct the peculiar impression that deaf-mutes might make better aviators than normals, because whirling cannot make them dizzy. Deaf-mutes in which only a vestige of vestibular function remained gave results almost identical with those of the first group. Those in full possession of vestibular function showed a marked improvement over the others, and practically the normal index as to accuracy of detection of movements of the 'plane in the later flights.

Three professional fliers and one professional trick motor-cyclist showed their superiority over ordinary people in detecting angles.

It is demonstrated by this series of experiments that man's ability to sense motion is measured by his full possession of visual acuity, deep sensibility, vestibular sense acuity, and tactile sense. And particularly, that the "feel of the airship," which is the sense-complex that makes for a first-class pilot, requires normal vestibular motion-sensing. One who shows good responses in the turning-chair shows good detection of movement in the air; one who shows poor responses in the turning-chair shows poor detection of movement in the air.

J. S. Fraser.

BRONCHI AND CÆSOPHAGUS.

Observations on the Pathology of Foreign Bodies in the Air and Food Passages: Based on the Analysis of 628 Cases.—Chevalier Jackson. "Surgery, Gynecology and Obstetrics," March, 1919.

Chevalier Jackson has had probably more experience than any other laryngologist in foreign bodies in the air and food passages. In this paper he contrasts the pathological effects of recently aspirated foreign bodies with those of prolonged sojourn.

Metallic foreign bodies, glass, pebbles and vulcanite cause comparatively little reaction. Soft rubber, on the other hand, causes fairly severe reaction. Organic vegetable substances such as beans, peas, maize and peanuts cause a very violent reaction and are generally rapidly fatal if left alone. Roasted peanut kernels are the worst of all in this respect, causing a diffuse tracheobronchitis in a few hours. Bone and meat cause very little irritation. The amount of reaction of hard bodies

depends upon whether they completely occlude the bronchus. If they are rough a certain amount of local trauma is caused, but no general reaction.

Nearly all foreign bodies in the bronchi tend to migrate continually downwards and outwards towards the periphery. Finally, the foreign bodies become fixed and a septic cavity is formed. Long, pointed foreign bodies, such as pins, tacks, etc., pass downwards by a ratchet-like movement.

Foreign bodies are more common in the bronchi of the right side. They are rare in the bronchus to the middle lobe. The lodgment is usually immediately below a branch bronchus, as the bronchi do not taper, but narrow suddenly at each branching. The most common site for foreign bodies is just below the branch to the right upper lobe. The next most common site is the corresponding position on the other side. Dorsal branches are more commonly affected than ventral ones.

In 23 cases where foreign bodies had been present for periods varying from three months to eighteen years clinical signs of tuberculosis supervened, but in no case was the tubercle bacillus found, even after repeated examination. Of these cases, 16 recovered rapidly and completely after the removal of the foreign body. The power of recovery of the lung after the prolonged presence of a foreign body is remarkable. The longest case was one where a glass collar stud was twenty-six years in the bronchus. The patient had emaciated through septic absorption to 98 lbs. Two years later she weighed 182 lbs. and the lungs were normal. The writer always takes a skiagram of the chest after operation for comparison with that taken beforehand. There is usually an immediate clearing from the pumping and swabbing of secretions.

When a bronchus is occluded the secretions accumulate below and soon become purulent. This "drowned lung" gives the same note as an area of atelectasis. This may develop in a day or two. If relieved early, recovery is prompt and complete. If not relieved, bronchiectasis or abscess occurs. Out of the 23 cases of prolonged sojourn 10 had bronchiectasis, 6 had abscess formation, while in the others it was difficult to differentiate.

In old-standing cases of foreign body pus was very copious, foul, and dark in colour. In peanut cases the pus was pink. In 16 cases there was a stricture of the bronchus. The foreign body is always at the upper end of the pathological mass. Where there is a cavity the foreign body is always at the neck of the cavity. In recent cases, when a bronchus has been blocked for a day or more, the mucous membrane above the foreign body always swells and forms a stricture. Absorption of air occurs below and the foreign body is fixed more tightly than ever.

Participation of the other lung in the bronchitis of foreign body origin does not usually occur in recent cases except when the intruder is of an extremely irritating class, such as peanut kernels and maize. In these, diffuse bronchitis of both lungs is the rule, so much so that the bronchoscopist is deprived of one of his best guides for finding the location of the foreign body, namely, the evidences of pathology at or near the orifice of the particular bronchus invaded."

Subglottic edema is very liable to occur in children under nineteen months, especially in peanut cases. Tracheotomy may be required. In children, also, there is a tendency to edema of the lungs and the patient is apt to be drowned in his own secretions.

The writer has observed that the main flow of secretion by ciliary action is up the posterior wall of the trachea and through the interarytænoid region.

In Jackson's clinic there were 98.1 per cent. of successes. The mortality was less than 0.5 per cent. directly attributable to endoscopy. The total deaths from any cause whatsoever one month after endoscopy were 1.9 per cent.

J. K. Milne Dickie.

LISTS OF ORIGINAL PAPERS.

Amer. Journ. Med. Sci., January, 1919. (Abstracted by THOMAS GUTHRIE.)

REGAN (New York).—"Anatomic Points Determining the Direction of the Needle and the Proper Route for Lumbar Puncture in Children and Adults."

March, 1919.

WALKER, I. C.—"Sensitisation and Treatment of Bronchial Asthmatics with Pollens."

Arch. Ital. di Laryngol., Anno xxxviii, fasc. 3-4, 1919. (Abstracted by J. K. MILNE DICKIE.)

FERRERI, CH.—"The Antitubercular Campaign from the Laryngological Point of View."

TORRINI, U. L.—"On the Infective Origin of Ozena—Experimental Researches."

BRUZZONE, C.—"A Case of Syndrome of the Foramen Lacerum Posterius of Obscure Etiology."

BILANCIONI, G.—"The Syndrome of the Posterior Cranial Nerves from Gunshot Wounds of the Facial Sinuses and Jaws."

Boll. del Prof. Grazzi, fasc. 11, Anno xxxvi, 1918. (Abstracted by J. K. MILNE DICKIE.)

AGAZZI, B.—"Violent Lesion of the Ear with Fracture of the Petrous and Paralysis of the Facial Nerve; Operation; Rapid Recovery of Function of the Nerve Resulting from Decompression."

Monatsschr. f. Ohrenheilk., 48 Jahrg., H. 5, 1914. (Abstracted by J. K. MILNE DICKIE.)

AGAZZI, B.—"The Pathology of Middle-ear Tuberculosis."

Revue de Laryngologie, March 15 and March 31, 1919. (Abstracted by H. LAWSON WHALE.)

ABOULKER, HENRI (Algiers).—"Modification in the Operative Treatment of the Intracranial Complications of Otitis: Temporal and Occipital Trephining at a Distance from the Ear."

Revue de Laryngologie, No. 9, May 15, 1919. (Abstracted by J. K. MILNE DICKIE.)

ABOULKER, H.—"Cured Otitic Meningites (Sixteen Personal Observations)."

No. 10, May 31, 1919.

ABOULKER, H.—"Cured Otitic Meningitis (Conclusion)."

PUGNAT, A.—"Dislocation of the Inferior Turbinate in the Treatment of Nasal Obstruction."

No. 11, June 15, 1919.

GAREL, J.—"New Perfected Apparatus for Stereoscopic Photography of the Larynx in the Living."

ROY, J. N.—"Syphilis in the Blacks of Africa and its Oto-Rhino-Laryngological Manifestations."

The Laryngoscope, vol. xxix, March, 1919. (Abstracted by J. S. FRASER.)

FAULKNER, E. R. (New York City).—"Tic Douloureux, with Special Reference to Treatment by Alcohol Injections," p. 128.

HARRIS, THOMAS J. (New York).—"Ankylosis of the Crico-ary-tenoid Articulation with the Report of a Case Presenting Involvement of Both Joints and requiring Tracheotomy," p. 139.

KAHN, ALFRED (New York City).—"Two New Instruments for Reaming the Upper End of the Eustachian Tube in the Radical Mastoid Operation," p. 143.

WILLCUTT, G. H. (San Francisco).—"Vestibular Reactions in Central Nervous Diseases; Report of Three Cases," p. 145.

KIEFFER, H. A. (Los Angeles).—"Vincent's Angina," p. 150.

This paper is really a review of the subject. It is well written but contains nothing new.

DUDLEY, W. H. (Los Angeles).—"Parosmia," p. 156.

STEEL, MARY SUMMERS (Philadelphia).—"A Plea for the Early Training of Defective Speech," p. 160.

KESSLER, EMMA B. (Omaha).—"The Aurist and Lip-Reading," p. 163.

HUSIK, DAVID N. (Philadelphia).—"Alar Collapse Following Septal Abscess in an Infant," p. 166.

NOTES AND QUERIES.

Major H. D. Gillies, R.A.M.C., has been appointed Surgeon to the new Department of Plastic Surgery at the Prince of Wales's General Hospital, Tottenham, and will take up his duties as soon as he is released by the military authorities.

Mr. C. H. Hayton, F.R.C.S. Edin., has been appointed Surgeon to the Nose, Throat and Ear Department of the Prince of Wales's General Hospital, in place of Major H. D. Gillies, resigned.

BOOK RECEIVED.

The Care of the Nose and Throat. By *W. Stuart-Low, F.R.C.S. Eng.* Price 3s. 6d. net. Baillière, Tindall & Cox, 8, Henrietta Street, Covent Garden.

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**A METHOD OF TREATING ATROPHIC RHINITIS WITH OZÆNA
BASED ON AN ALTERATION IN COMPOSITION AND
REACTION OF THE SUBSTRATE ON WHICH THE
BACTERIAL FERMENTS ARE ACTING.¹**

BY T. H. C. BENIANS, F.R.C.S.Eng.,
Pathologist; and

CHARLES H. HAYTON, F.R.C.S.Edin.,
Surgeon, Ear, Nose, and Throat Department,
The Prince of Wales's General Hospital, Tottenham, N.

PART I. BACTERIOLOGICAL.

BY T. H. C. BENIANS.

THIS treatment, which has been already published by one of us,² is based on what might be described as a glycophilic method of bacterial selection, and is directed primarily against the factor of the disease. It will be evident from the title of the communication that there are two essential conditions that must govern the possibilities of its success.

- (1) That the disease is actually due to the action of bacterial ferments.
- (2) That the substrate is extra-corporeal and capable of alteration by direct application from the exterior.

General Considerations as regards Bacterial Infection of the Nasal Cavities and its Treatment.

Infection.—We have to take into consideration that the nose is a moist, open passage-way and an air-filter, and thus it comes to have a more or less definite bacterial flora. The organism most frequently isolated is probably the *Staphylococcus albus*, and it is reasonable that this should be regarded as a normal inhabitant both of the cutaneous

¹ Paper read at the Summer Congress of the Laryngological Section of the Royal Society of Medicine, May 2, 1919.

² *Brit. Med. Journ.*, June 15, 1918.

and mucous surfaces, since in health its presence is tolerated without reaction by these surfaces. In the healthy nose these bacteria gain a foothold only in the region of the anterior nares,¹ elsewhere owing to the mechanical cleansing of the nose and the nature of its secretions, they are rapidly removed. In the disease under treatment here these natural conditions are altered, and these so-called normal bacteria may be found scattered throughout the diseased areas. When an abnormal organism takes root in the nose it probably means either that there has been a massive implantation of this organism on a healthy mucosa, or in the case of a slight infection, that the mucosa was in an abnormal physical condition, and its secretions moreover specially suited to this type of growth. There must be, in other words, a predisposition or diathesis. It follows that in attempting to cure permanently such an infection, especially if of old standing, we must aim not alone at eradicating the abnormal organism, but, inasmuch as the normal self-cleansing properties of the nose are either temporarily or permanently upset, we may need to replace the obnoxious with a less harmful or normal bacterial growth and to render the site more suitable to its mode of life than to that of the infecting bacterial growth. Failing the restoration of the normal physical conditions in the nose, we may have to continue to render the site more suited to the growth of these normal bacteria than to the growth of abnormal and obnoxious bacteria, for it is probable that bacterial growth of some sort will continue on the damaged mucous membrane.

Treatment by Vaccines.—If we regard the infecting bacteria growing on the mucous surface and in the nasal secretions as living an extra-corporeal and saprophytic existence, we are faced by the fact that anti-bodies are not likely to be formed in the tissues, and that a spontaneous cure in this way is in the highest degree improbable. Moreover, it does not seem feasible that bacteria in this exterior relation to the body should be affected by anti-bodies artificially formed in the body, as, for instance, by the administration of vaccines.

Use of Disinfectants.—In trying to eradicate infecting organisms by means of disinfectants, if we are thorough we may obtain a more or less complete destruction of the infecting bacteria. But we do not alter in this way the abnormal condition of the mucosa and its secretions, which have probably during the course of the disease become well suited to the needs of the infecting bacteria. The result is that those bacteria that survive will find the place swept and garnished for them, and in a short time will recommence their activities more vigorously than ever.

The Causative Organisms of Ozæna.—For the purposes of this paper these need only be mentioned briefly.

(1) The *Bacillus mucosus capsulatus* of Lowenberg. This type of organism is almost always to be isolated from these cases at one time or another during their course: in our experience more frequently and abundantly in the less marked cases and in those approaching a cure. It is agreed that this organism does not produce fætor, although it has been suggested that the atrophy of the mucosa is caused by it.

(2) Dan McKenzie and Wyatt Wingrave² have recently called attention to the acid-fast bacilli frequently found in the crusts in ozæna

¹ *Med.-Chir. Trans.*, vol. lxxviii, 1895, Bibliog.

² *JOURN. OF LARYNGOL., RHINOL., AND OTOL.*, 1916.

cases. These are apparently most common in the more severe cases. Their acid-resisting properties differ very considerably from those of the tubercle bacillus. We have not found them in culture.

(3) The *Cocco-bacillus fœtidus* of Perez. This bacillus is usually to be found in severe cases, but may be difficult to isolate, though at times it occurs very abundantly in cultures. The bacillus does, in our opinion, produce a factor similar to that of the ozæna cases, and which we think is distinct from that of other fœtid bacterial growths. It seems probable therefore that this bacillus is at any rate to a large extent the cause of the offensive odour of ozæna.

Conditions of Life of the Bacillus fœtidus of Perez.—Put very shortly and dogmatically this is an organism that has very little capacity for fermenting or living on the carbo-hydrate bodies; even glucose is not fermented by all strains, and the action on this substance is relatively slow. Glycerin is not fermented by any strain that I have worked with. The bacillus apparently lives entirely on protein bodies, the destructive action on which is very rapid, and end-products of protein digestion, such as indol and other fœtid substances, quickly appear in the culture medium. This bacillus will not grow in acid broth (+ 40).

Conditions of Life of the Staphylococcus albus.—These conditions contrast very strongly with those under which the bacillus of Perez lives, inasmuch as these cocci ferment most carbo-hydrate bodies and usually glycerin. Although they ferment and destroy proteins they do not carry the process on to the length of producing indol and the foul end-bodies of tryptic protein digestion. Most of these cocci grow freely in acid broth (+ 40).

As has been pointed out, these bacteria, among others, may be regarded as normal to the cutaneous and mucous surfaces of the body in a general sense, and we propose to exploit their activities in connection with this form of treatment.

Actual Source of the Factor in Ozæna.—Whether or not all are agreed as to which organism is actually responsible for the foul smell, it is generally allowed that it arises as a result of bacterial decomposition. In other words, it is due to the presence of end-products of tryptic fermentation, such for instance as normally takes place in the intestine. Now this process goes on under well-known physiological conditions, and we can briefly review the circumstances under which it is presumably taking place in the nose. We can thus put aside for the moment the question of the actual causal organism, *i.e.* the source of the ferment, and deal only with the actual tryptic ferment itself.

Conditions under which Tryptic Ferments can act.—There are three prime essentials for this type of ferment action:

- (1) A tryptic ferment.
- (2) A protein substrate.
- (3) A slight degree of alkalinity of the substrate.

There are then three obvious courses open to us in combating tryptic fermentation:

(1) To remove the ferment and its source of origin. This has been referred to under the heading of disinfectant treatment. It will probably be generally agreed that it is not entirely possible to do this completely in the case in point.

(2) To alter the nature of the substrate, substituting some other body as completely as possible for the protein constituent.

(3) To alter the reaction of the substrate, making it acid instead of alkaline.

In this method of treatment we have tried to combine the second and third alternatives, leaving the first to follow as a natural sequence.

Substances used for altering the Composition of the Substrate.—At present we have only worked with two things—glucose and glycerin. By applying these substances abundantly and frequently in the nasal cavities, we do undoubtedly, to a considerable degree, alter the composition of the substrate on which the bacterial ferments must act.

Means relied on for the Alteration of the Substrate.—An obvious method of carrying this out would be of course the direct addition of acid by local application, but in practice this is not very effective, no doubt for one reason—that it does not mix readily with the mucous secretions of the nose. There is also the very potent theoretical objection that acids are at best only waste products of bacterial action, and the direct application of acid is thus on all fours with the use of disinfectants, in that it has a deterrent effect on both the abnormal bacteria and on those whose growth we wish to promote, at any rate for the time being. We rely on the fermentation, by the bacteria themselves, of the fermentable substances supplied, which leads to the production *in situ* of various organic acids. These inhibit the action of the tryptic ferments, and in due course the bacillus of Perez dies out. The carbo-hydrate medium at the same time encourages the growth of such bacteria as can take advantage of it, and so repopulation with a different type of organism goes on concurrently.

In vitro these changes in reaction brought about by carbo-hydrate fermentation are readily demonstrable, and on them the method of treatment has been founded, but it must be remembered that only very slight changes one way or other are necessary to determine which organism shall have the advantage over the other, and *in vivo*, with the constant dilution that goes on, no doubt only very slight changes do take place. I point this out because with the indicators at our command we have not been able fully to demonstrate these changes in the nasal secretions. Until we can demonstrate this satisfactorily we are not prepared to assert that our clinical results have been obtained literally in accordance with our experimental findings.

The Probable Necessity for the Presence of Suitable Bacteria in the Nose as Part of the Treatment, and Possibly Permanently.—The presumed part played by the glycophilic bacteria in this method of treatment has been already explained. If a complete cure of the infection were obtained, as it ought to be in quite early cases, and the nasal mucosa, not being structurally damaged, resumed its normal functions, it would presumably return again to its natural state of cleanliness and relative sterility. Since, however, in most cases there is a good deal of damage to the mucosa, it is likely that the natural cleansing function will be permanently impaired, and that bacterial growth will become established, not only in the region of the anterior nares, but throughout the nose. It therefore seems necessary that upon the extirpation of the obnoxious bacteria repopulation should take place with harmless bacteria, such as are normally found in the anterior part of the healthy nose.

During the treatment the bacterial contents of the nose should be examined to see that bacteria are present of the right kind and in sufficient numbers to produce fermentation of the medium supplied and

to repopulate the mucous surfaces as the abnormal bacteria are killed out. If a case is not progressing it will probably be found that no bacteria suited to the substance supplied are present. That has twice been our experience when using glycerin alone in the treatment of a case, and in both instances the addition of glucose to the glycerin has resulted in an immediate change for the better. If suitable bacteria are not present they may be supplied in company with their optimum food-stuff. We prefer not to dogmatise too much on this at present, as we have only carried it out on two cases. Theoretically, however, in a nose whose natural cleansing functions are in abeyance, it should be as easy to alter the bacteriology of the surface of the mucosa, and the resulting flavour of the breath, as it is to alter the flavour of a cheese.

Summary.—In brief, this method consists in an attempt to encourage the growth of glycephilic bacteria in the nose and to discourage the infecting proteophilic bacteria of ozena, by supplying to the site of infection media of a carbo-hydrate type. The fermentation of this foodstuff by those bacteria that are able to make free use of it leads to the production of an acid substrate which inhibits the activities, and is inimical to the existence of the bacillus of Perez, which in our opinion is the cause, at any rate, of the factor in this disease.

PART II.—CLINICAL.

By C. H. HAYTON.

The object in reviving the discussion of the treatment of atrophic rhinitis with ozena is to present the outline of a simple and effective method based upon a study of the character of the bacterial flora inhabiting the nose in this disease. As a result, the most distressing features of the complaint, the fætor and the headaches, quickly disappear, the disagreeable crusts are rapidly diminished, and improvement is noted in the conditions of the mucous membrane and the general health of the patient.

We do not claim for this treatment that it will restore old-standing structural changes in the tissues which have taken place during the course of the disease.

GENERAL CONDITIONS OF METHODS OF TREATMENT.

Heretofore the majority of the investigators of this disease—Perez, Abel, Hofer, Kotler, McKenzie and others—have endeavoured to isolate a specific organism or a group of organisms and to prepare a vaccine therefrom. Another group of investigators, believing the cause to be due to pus-producing organisms or a group of such, have worked along lines of surgical cleanliness and drainage, trying to compound a satisfactory disinfectant to be applied locally in the form of a nasal douche, powders or paints. In the method initiated by my colleague, who has already published an article on this subject,¹ the aim has been to substitute a carbo-hydrate medium in order that the infecting proteolytic bacteria may be replaced by the harmless glycolytic bacteria found in the nose, the theory being that these latter bacteria by the fermentation of the carbo-hydrate bodies create an environment in which the activities of the Perez bacilli are inhibited and the bacteria themselves finally destroyed.

¹ *Brit. Med. Journ.*, June 15, 1918.

The Method Employed.—The substances used thus far in this method of treatment are glycerin and liquid glucose. These substances are applied copiously to the mucous membrane of the nose in a mixture consisting of pure glycerin with the addition of 25 per cent. liquid glucose. Several applications a day are made with a cotton-wool applicator, the whole of the nasal cavity being gone over and the crusts rubbed off as far as possible. This is done in the first instance by the surgeon and subsequently by the patient at home. At each future sitting the nose is carefully examined and further applications made to the neglected parts. From time to time the flora of the nose is examined to note the cultural properties of the bacteria present and to determine whether or no they are of the strain to ferment the media supplied. Glycerin, though less satisfactory from a theoretical point of view, since it is less easily broken up by bacteria, has some advantages over glucose on account of its physical properties. In some cases where a spray or irrigation is required a mixture of the two substances has been used in a 10 per cent. aqueous solution.

The Success of the Treatment.—The whole secret of the success in this method of treatment—and I wish especially to emphasise this point—lies in the fact that the solution must be applied thoroughly to every part of the mucous membrane infected at least four or five times daily to begin with. As improvement is noted, it will not be necessary to paint so often. The application is a simple matter in early cases, but sometimes most difficult in severe cases, in which the crust formation goes on in the naso-pharyngeal region, especially the roof and the Eustachian cushions, or in the middle meatus around the bulla ethmoidalis and the uncinate process, or in the olfactory sulcus and in the posterior parts of the inferior meatus. To get over this difficulty it is well to gently irrigate the nose at first, to flood these parts with solution, and later, besides the wool application, to use a coarse spray. In a case of thirty years' standing this was found to be most effective.

Glycerin and Sugar.—It is interesting to note in this connection that glycerin and sugar have been used in the treatment of ozæna in times past, but in the cases of glycerin, with one exception, as the excipient of a disinfectant, and in the case of sugar in the one instance mentioned in a simple syrup and powder.

In the British *Journal of Laryngology*¹ the author recommends the application of glycerin borax by a nasal spray and recounts successful treatment in a number of cases. The composition of the well-known Mendl's paint, still used in ozæna, has glycerin as its base. The glycerides of tannin and ac. carb. in weak solutions have also been used. In 1913 Abottson² treated twenty cases with success with a 5 per cent. solution of reniform in glycerin. Logan Turner has used pure glycerin previous to douching the nose. Harry³ in 1915 used simple syrup and powdered sugar in the nose and reports successful treatment. It will be noted, however, in the cases of glycerin that the disinfectants used were of a mild order. It is the opinion of the writers that the successes obtained in these cases were not due to the disinfectants used, but rather to the glycerin and sugar and also to the absence of repeated douching.

Douching the Nasal Cavities in Ozæna.—The constant and continual

¹ Vol. 1894, p. 596.

² *Med. Press and Circ.*, 1913, p. 658.

³ *Prescriber*, 1914-5.

douching of the nose with aqueous solutions in ozaena cases is a practice not to be encouraged. While it may temporarily relieve the nose of crusts it exposes the whole upper respiratory tract to numerous complications: *First*, it tends to spread the infection to other parts of the nose and throat. One patient declares positively that the crusts were confined to the left nostril until she began to douche, and then they soon appeared in the right and in the throat. *Secondly*, it washes the harmless flora and the normal protective secretions away and exposes the bare mucous membrane to other infections and to catarrhal conditions. In this method of treatment little douching is required. The harmless organisms in the nose are encouraged and the protective secretions are strengthened, with the result that the abnormal organisms are finally extirpated. The investigations as to the ultimate value of this form of treatment are only as yet in their early stages, and we hope in due course to make a further report, but enough has been done to believe that this method of treatment is more simple and effective than the disinfectant douching method.

The Results of Glycophilic Treatment in Ten Cases.—In the summary of the histories of the ten cases following which were treated by us extending over a period of two years it will be noted that none were syphilitic, none were tubercular, but four gave a history of tuberculosis in the family. In two cases two sisters were similarly affected. After careful examination, with one exception all showed the sinuses and antra free from infection. Four had complete loss of smell, and all but one were affected with frontal headaches; all had greenish crusts and stench. After a short application of the treatment, the headaches and factor of all the cases disappeared and the greenish crusts were replaced by muccoid secretions. At a recent examination of the cases no typical crusts were seen, the mucous membrane appeared healthy, but the treatment has not as yet affected the anosmia or the atrophic conditions. All the patients are being advised to continue the applications once a day for the time being.

CASE 1.—Miss M—, aged twenty-five, a V.A.D. nurse, the daughter of a medical practitioner. Six in family. No history of syphilis. Transillumination showed both antra and frontal sinuses clear. Complete anosmia. The condition was first noticed by the father when the patient was five years old, his attention being called to the peculiar odour and crust formation in the nose. Nasal douches were begun and practised for years. Disinfectant powders were used. The adenoids and tonsils were removed at seven years of age. Radium water as a nasal douche and numerous vaccines were injected. General measures, such as a course of massage and electric baths, were given, but without any apparent effect upon the course of the disease. The glycerin treatment was begun in December, 1917. In a short time the odour and headaches disappeared and the crust formation was much diminished. Mucous membrane is normal, but considerable atrophy is present. She began with six applications daily; now paints but once.

CASE 2.—Miss B—, aged twenty-four, school-teacher. Seven in family. Younger sister affected in the same way. History of tuberculosis on mother's side, but none in the immediate family. Wassermann reaction negative. Transillumination shows a slight dulness of the left antra. Proof punctured occasionally, but no trace of pus. Six years ago patient felt small pieces of scab dropping in her throat. Her attention was called to a stinking odour in her nose. She began with the usual syringings and kept them up for years. She shunned society because of her condition. She came under the treatment in 1916. The odour, headache and scabs disappeared in three weeks. Her mucous membrane appears quite normal. Atrophy still present in both nostrils. She began with six applications daily; now paints but once a day.

CASE 3.—Miss B——, aged twenty-two, typist, sister of above. Wassermann reaction negative. History of tuberculosis on mother's side. Five years ago patient first noticed scabs in left nostril and throat. Her mother called attention to the odour from her nose. Slight frontal headaches. Began the usual nasal douching. Came under the treatment in 1917. In a short time the headaches, fetor and scabs disappeared. At a recent inspection of the nose no scabs were visible, no odour detected, mucous membrane apparently healthy and no atrophy apparent. She began with four applications daily; she now paints but once every three days.

CASE 4.—Edna P——, aged fifteen. Father a chemist. Four in family. History of tuberculosis on father's side. No venereal history. At eleven years of age father noticed large "slugs," as he called them, in child's nose with a horrible odour. She complained of persistent headaches. Occasionally smelt crusts. Began in right side. Left side infected by douching right side. Took her to a physician, who recommended the usual nasal douches. Tried peroxide of hydrogen, protargol, silver nitrate and tincture of iodine in various strengths. Came under treatment in 1917. In two weeks the headaches stopped, the odour disappeared and the crusts rapidly diminished. At the last inspection mucous membrane quite normal. Slight atrophy noticeable in right nostril. Occasionally "smelt scabs" when treatment was neglected. She began with five applications daily; now only paints night and morning.

CASE 5.—Mrs. B——, aged thirty-one, wife of a bank clerk. No history of tuberculosis. No venereal diseases. Complete anosmia. At present under treatment for gastric catarrh. Eight years ago husband noticed a peculiar smell and advised his wife to see a doctor. She complained of headaches and crust formation in the nose. The usual douches were prescribed and carried out for years. The disease was more persistent in the right nostril. Her dentist advised her to seek further advice. She came under the treatment in September, 1917. In a short time the odour had vanished. After one month's treatment the headaches had ceased and the scabs gradually disappeared. Considerable atrophy still remains. She began with six applications only; now paints but once a day.

CASE 6.—Miss C——, aged twenty-four, domestic. History of tuberculosis in immediate family. Wassermann reaction negative. Transillumination negative. Eighteen months ago patient first noticed scabs in handkerchief. Her father complained of the bad smell in her nose. Has objective fetor; suffered from frontal headaches. Came under treatment twelve months ago. Headaches, fetor and crusts have now disappeared. Mucous membrane appears normal. Deflected septum to right. Atrophy still apparent in left nostril. She began with five applications daily; now only one.

CASE 7.—Louisa P——, aged forty-three, housekeeper. Three sisters. No tuberculosis in family. Wassermann reaction negative. Complete anosmia. Transillumination negative. Twenty years ago patient's attention was first called to her nose by her sister, who complained of a bad smell. She soon noticed crust formations and complained of frontal headaches, which in time became persistent. Has tried many remedies, douching, powders and ointments. Has developed gastric trouble with declining health. Eight months ago patient came under the treatment. After a month she had no fetor; a few atypical crusts were still present; no headaches. Mucous membrane somewhat dry and atrophy still apparent. She began painting six times a day; now paints twice daily.

CASE 8.—Miss T——, aged seventeen, domestic. Three sisters and two brothers. No history of tuberculosis in family. Wassermann reaction negative. Transillumination negative. No headaches. Three years ago patient first noticed crusts and was told by her mistress of the stench from her nose. Has attended her physician and hospital treatment. Has tried persistently the same common remedies. Patient first came under the treatment three months ago. The fetor and crusts have disappeared. The mucous membrane appears normal. Much atrophy in both nostrils. She began with six applications; now only two daily.

CASE 9.—Mrs. S——, aged sixty-eight, widow. One sister. No history of tuberculosis in family. Wassermann reaction negative. Transillumination negative. Sister affected with the same complaint. For thirty years this patient has suffered with crust formation and disagreeable odours. She has also suffered with frontal headaches, although she wears glasses and has had her eyes treated repeatedly. Has used glycerine tannic for the throat for years. Never douched her nose. Came under the treatment one month ago. Gentle irrigation was tried in this case with a 10 per cent. solution of glucose and glycerin. In a

fortnight the crusts have disappeared and odour vanished. Mucous membrane dry and glazed and some atrophy present. Now sprays twice daily.

CASE 10.—May L.—, aged thirty-two, tailoress. Two in family. No venereal history. Tuberculosis in family. Transillumination negative. Complete anosmia. Crusts appeared when patient was eight years old. Slight headaches. Smell noticed by mother, who took her to the doctor. The usual douching was prescribed. Has suffered severely from catarrhal colds. Came under treatment in January, 1917. At last inspection one small odourless crust seen. Mucous membrane dry and much atrophy in both nostrils. Anosmia not affected. She began with six applications daily; now paints but once.

GUNSHOT WOUNDS OF THE NASAL ACCESSORY SINUSES.¹

By JOHN F. O'MALLEY, F.R.C.S.Eng.,

Major, R.A.M.C.; Surgeon for Diseases of the Ear, Nose and Throat, Royal Herbert Hospital, Woolwich; Surgeon, Royal Ear Hospital, and Aural Surgeon, Evelina Hospital for Sick Children, etc.

FIFTY-NINE cases were examined clinically for wounds of entry into sinuses and for sepsis in nasal cavities; also by X rays for evidence of bone damage and its extent, for the presence or absence of foreign bodies and for varying degrees of opacity. The antral cases were submitted to transillumination for the presence or absence of infra-orbital crescents or pupil illumination except in such as presented large wounds and obvious sepsis.

ANALYSIS OF CASES.

Antra.—23 right and 27 left were involved.

Ethmoids.—5 right and 9 left.

Frontals.—1 right and 3 left.

Sphenoids.—1 left.

Missile.—Rifle bullet in 24, shrapnel casing in 33, and shrapnel bullet in 2.

Side of entry.—Right 24, left 34. 1 entered by vertex.

Side of exit.—Right 21, left 10. 1 passed out under chin.

Retained in body.—In sinuses 11, soft tissues over sinuses 8, and elsewhere 8.

Extent of injury:

Soft tissues.—*Punctured wounds*: (About size of missile) 52.

Large wounds: (Many times larger than missile) 7.

Sinus wall.—*Punctured wounds* in 42.

Large wounds: (About twice size of foreign body) 14.

Very large: Half upper jaw carried away in 3.

Nose.—Adhesions in 26; mouth involved in 8 and orbit in 9.

Eyeball.—Lost in 10 (right 3, left eye 7); injury in 8 cases (right eye in 3 and left in 5).

Sepsis consequent on injury.—In wounds 18, sinuses 25, nose 18, mouth 4, and orbit 2.

Sepsis consequent on retention of missile.—In tissues 6, in sinuses (antra) 5.

No sepsis due to injury, in tissues 29, in sinuses 30.

No sepsis due to retention, in tissues 6, in sinuses 6.

¹ Paper read at the Summer Congress of the Laryngological Section of the Royal Society of Medicine, May 2, 1919.

Secondary hæmorrhage, 1.

X-ray examination.—Bone injury. This is given above under the heading "extent of injury to sinus wall."

Appearance of sinus (antra).—Not X rayed: 3 cases of very large injury. Cloudy (indistinct outline) in 13. Opaque: very dark in 34.

Transillumination.—All antra were so examined except those with open wounds and manifest sepsis. Infra-orbital crescent: present 3, absent 33.

Pupil illumination.—Present 7, absent 29.

Infra-orbital crescent absent and pupil illumination present, 3.

Puncture.—In all antra except those with open wounds and metal fragments present, 22. 25 were clear and 3 showed pus of 28 punctured.

Summary of Sinuses, Septic and Non-septic:

Ethmoids, 14 injured: septic 4, non-septic 10.

Frontals, 4 injured: septic 2, non-septic 2.

Antra, 50 injured. Traversed by missile 28, metal fragment or bullet retained in 11, and injured but not traversed by missile 11.

No sepsis in 11 non-traversed antra, sepsis in 5 with retained foreign body and no sepsis in 6. In 28 traversed by missile, sepsis manifest (open wounds) in 11, concealed (discovered by puncture) in 3, no sepsis in 14, 2 of which had free drainage openings into nose caused by missile.

By adding together the antra traversed by missile, the non-traversed and those with retained metal fragments or bullets, we get 29 non-septic, 19 septic and 2 doubtful (drainage opening made by missile).

TREATMENT.

Where no sepsis was discernible in wound, sinus or nose, and no foreign body was present or nasal obstruction resulted from the injury, any simple application, such as iodine, sufficed.

Where sinus sepsis was manifest, or revealed on puncture, or nasal obstruction was caused by adhesions, the treatment was surgical to (a) give a freely ventilated nose and (b) establish intra-nasal drainage of sinus.

Foreign bodies in the antra were removed through the canine fossa, and a large opening made into the nose to insure its remaining patent. The small opening recommended by some writers is worse than useless, because it rapidly closes in these vascular tissues and the cavity remains septic.

Nasal adhesions were removed by Grunwald's forceps in 26 cases, and in many of these submucous resection had also to be done. Adhesions in the middle turbinate region were a great factor in causing antral sepsis, probably through blocking the ostia.

In the light of the experience which this series of cases afforded me I would like to briefly put before you my opinion on the following points:

(1) The value of X rays and transillumination in diagnosing the internal condition of a sinus.

(2) The frequency of sepsis in external injuries and through-and-through puncture wounds of the sinuses.

(3) Is there need for intra-nasal drainage in every antrum traversed by a missile whether sepsis is present or not?

(4) Should every metal fragment be removed?

(5) The response to surgical treatment of sinuses affected by trauma as contrasted with disease.

X rays are valuable to diagnose a bone injury or presence of a foreign body and to indicate degrees of opacity and lack of definition of outline or otherwise. The opacity may be due to a subperiosteal, submucosal or inter-sinus hæmorrhage, or to previous mucosal inflammatory thickening or to the presence of pus or polypi, but it is impossible to diagnose positively by this means the nature of the contents of a sinus. Puncture will solve the difficulty for the liquid contents of an antrum, but for the presence of polypi I am not aware of any reliable test. In traumatic cases opacity to X rays is greatest in an antrum injured through the anterior wall.

I believe that a sinus whose outer bony walls have been injured, with, perhaps, a slight fracture and not traversed by a missile, will show opacity to X rays for many years. I have notes of cases not included in this series, such as falls on the face off motor cycles or horses, kicks by mules or horses, and aeroplane crashes, which were opaque to X rays long after the injury, although no sepsis was present.

Transillumination.—The abolition of the infra orbital crescents and pupil illumination follow very much the same lines as the findings in X rays. An interesting point was elicited in three cases, namely, that the infra-orbital region was dark and yet light was present in the pupil. My interpretation of the peculiarity is this: The anterior wall of the antrum was opaque to the light, but the orbital and antral floors were not, which suggests that the lesion was localised to the anterior wall. This may prove a useful test to distinguish an anterior wall injury from a condition of thickened mucosa or the presence of suppuration.

Frequency of Sepsis.—A sinus may receive a severe external injury and if not punctured will remain free from sepsis. Eleven of this series were antra so injured and still non-septic. An antrum may be traversed by a missile such as an ordinary rifle-bullet or a corresponding sized piece of metal, and unless the injured cavity has a patent communication with the mouth or external air or the trauma causes obstruction in the region of the antral ostium no sepsis may result. Twelve cases out of 25 of this series were of this type and were absolutely free from sepsis. Only 5 out of 11 of those with foreign bodies in the cavities for several weeks showed any sepsis.

A previously healthy antrum with good drainage into a well-ventilated nose will rapidly recover from even a septic trauma without any surgical treatment.

In the past two years I have had under my care three cases where the antra became infected immediately following the extraction of a tooth and foul-smelling pus escaped by the ostia into the nose. Here we had a puncture of the antral floor with septic matter poured into the cavity, of no less virulent a nature than anything a traversing bullet could introduce, and all three cleared up perfectly inside a fortnight without any further treatment than an alkaline nose-wash, and it cannot be claimed that this would affect the interior of the sinus. One of the patients was a doctor friend who urged me to operate and drain the cavity, but I pleaded for patience and he was perfectly well in a couple

of weeks and has remained so. I will make the reservation that in such a case it is necessary to ascertain that the affected antrum seems capable of draining itself, because, if not, it will be incumbent on the surgeon to provide a proper exit for its septic contents.

The Question of Intra-nasal Drainage.—A wounded antrum with gross sepsis in the wound and sinus should be drained freely into the nose and the external wound closed. If the external wound is healed or clean and healing satisfactorily and the sinus shows a little or no sepsis on puncturing, provided there is no obstruction to the drainage of the cavity caused by the injury or source of sepsis present, such as an open wound into the mouth, I would not advocate surgical treatment, and believe that in such a case it will be unnecessary.

Removal of Foreign Bodies.—A foreign body lying uncovered in a sinus should be removed as soon as possible, otherwise it will lead to local inflammatory reaction, the formation of polypi and changes consequent on impaired vascular nutrition and in time to sepsis. If the metal fragment is small and embedded in the wall of the cavity, but covered by its lining mucous membrane, no sepsis may ever result and removal is unnecessary. Small fragments in the walls of the nose and ethmoidal region are well tolerated.

Repair following trauma as contrasted with that in diseased conditions of the sinuses is very striking. The free drainage of a septic sinus resulting from trauma into a nasal passage which has ample ventilation will be followed by rapidly gratifying results, and this cannot be said with equal confidence of similar surgical procedures where chronic inflammatory diseases are concerned.

THE AQUEDUCT OF FALLOPIUS AND FACIAL PARALYSIS.

By DAN MCKENZIE, M.D.

PART I: THE AQUEDUCT OF FALLOPIUS.

(Continued from p. 300.)

The *length* of the tympanic segment in the 40 adult bones examined was: Highest, 11 mm.; lowest, 4 mm.; average, 7.8 mm. And in 10 bones of the first decade, highest, 11 mm.; lowest, 4 mm.; average, 6.8 mm. In this, as in many other respects, the difference between the infantile and the adult canal is trifling (see later).

The *slope* of the tympanic segment (Fig. 20) *relative to the horizontal plane* was taken in 42 bones. In adult specimens the numbers were: Highest, 50°; lowest 7°; average, 25.4°. And in the first decade, highest, 25°; lowest, parallel, the latter being at birth: 18° was reached in a specimen of two years, and 25° at the age of seven. So that both in adults and in children the inclination in the tympanum showed great variation.

The *angle formed with the sagittal plane* was also measured in 34 bones, but as it was frequently difficult to pose the dissected specimen in the position of life these estimates can only be regarded as approximate. They read, in adult life—highest, 85°; lowest, 30°; average, 53°; and in the first decade, highest, 65°; lowest, parallel (at birth). The numbers give some idea of the inward slope of the tympanic segment, which, of course, is postulated by the disposition towards the sagittal of the internal

(medial) wall of the tympanum itself. Having realised thus the obliquity towards the examining age of the tympanic cavity and segment of the Fallopian aqueduct, the next item to be considered refers to the extent in millimetres of the outward trend of the same segment. Looking at the unroofed tympanic cavity—from above, that is to say—does the Fallopian canal in its passage through the tympanum from the genu to the pyramid show any outward tendency? Does the canal at the commencement of the bend lie any further out (laterally) than it does at the genu?

Obviously, the only correct manner in which to approach this problem is to take the measurements with the bone in the pose of life. When this was done the results obtained varied so widely, however, that I was forced to abandon the detail entirely. When, on the other hand, the examination was made of the trend of the canal relative to the inner tympanic wall, it was found to be possible to obtain some definite information. In all, 31 adult bones were examined, and of these, two, curiously enough, gave a “minus” reading—that is to say, that relative to the tympanic wall, in two cases the canal at its entrance into the tympanum at the genu was more prominent than at its exit from the tympanum at the commencement of the pyramidal segment. Of the others 15 were “plus or minus”—no difference could be detected—and only 4 were “plus.” In the first decade 2 were “minus,” 5 “plus,” and 2 “plus or minus.” Thus the variation was extreme. And it is this character, doubtless, which rendered the readings for the trend absolute so unreliable. As far as they go we may, however, give the figures: Highest, 10 mm.; lowest, 2 mm.

We proceed now with *the relations of the tympanic segment.*

The prominence of the external canal visible in the inner wall and floor of the aditus and antrum (Figs. 9, 10, 14, 16, 19, 20) overhangs the aqueduct of Fallopius most towards its outer (lateral) end, at the commencement of the pyramidal segment. Here it may bulge out over the Fallopian canal by as much as 3 mm. in the adult. Followed from without inwards towards the genu, the facial canal is seen to emerge gradually from under the prominence of the external canal, until near its exit from the tympanum towards the genu it lies in the same plane as the prominence of the external canal.

At birth no overhang at all was found, at eleven months its prominence amounted to 0.5 mm., and by the eighteenth month the adult dimensions were reached. A considerable bulging of the cartilage in this position is noted by Bland Sutton in fetal life, and named the “pterotic ridge” (see later).

In accordance with the gradual swelling of the prominence of the external canal we find that these two canals—the external semi-circular and the facial—which lie about 1 mm. from each other about the level of the oval window, diverge to about 3 mm. as they come out, the external having a backward and the facial an outward route to follow.

For this reason in the “bridge” operation on the labyrinth the external canal should be opened as far out as possible in order to avoid injury to the facial canal.

The oval window lies immediately below the middle of the tympanic segment, separated from it by an interval so minute that it could not be measured. Indeed, as I have already expressed it, the canal lies like a gentle moulding in the upper arch of the niche of the oval window.

This fenestra to all intents and purposes marks the middle of the

segment, lying but a trifle nearer to the genu than to the outer end, the measurements being (in 36 adult bones), Genu to anterior border of foramen ovale: Highest, 5 mm.; lowest, 2 mm.; average, 3.15 mm. Posterior border of foramen ovale to commencement of pyramidal segment (31 bones): Highest, 6 mm.; lowest, 2 mm.; average 3.4 mm.

In the first decade (10 bones) the measurements of the former were: Highest, 4 mm.; lowest, 2 mm.; average 2.5 mm. And those of the latter were, in 8 available bones, highest, 6 mm.; lowest, 2 mm.; average, 3.4 mm.

Although, strictly speaking, not a detail of the aqueduct, the measurement between the prominence of the external canal and the promontory was taken (in 35 bones) as it is an important measurement in the bridge operation on the labyrinth. The figures were, in adults: Highest, 8 mm.; lowest, 3 mm.; average 5.4 mm. In the first decade

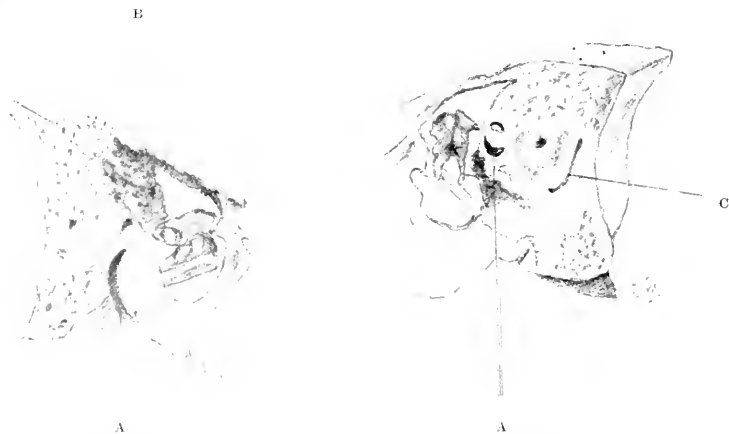


FIG. 22.

FIG. 23.

FIG. 22.—Section from without in infantile bone, showing A, Fallopian canal (vertical) in relation to ossicles and membrane. B is the aditus and antrum. Note the short vertical. (Bone 12, right temporal, slightly enlarged, female, aged three, natural pose.)

FIG. 23.—The same from within. A is the Fallopian canal in its position under the external semicircular canal seen in section above it. The section passes just external to the oval window. C is the posterior semicircular canal. Note malleus with a piece of membrane attached to it. Note also long and short process of incus. (Same bone as Fig. 22.)

the numbers were: Highest, 5 mm.; lowest, 3 mm.; average 4.45 mm. The birth measurement was 4.5 mm.

In a few cases the Fallopian canal was found to continue the route of the tympanic segment a few millimetres—tunnelling the bone—before it reached the genu.

It is worthy of remark that the tympanic segment no less than the vertical and other segments of the nerve in the temporal bone is extraordinarily well protected against injury from without. It is impossible to wound the nerve by incisions or punctures delivered direct through the meatus and tympanic membrane.

Relative to the contents of the middle ear, the aqueduct lies posterior to the pyramid and the tensor tympani. It is, in a way, bestridden by the processes of the incus, the short process lying on the aditus floor

and the long descending to meet the stapes (Fig. 23), and it is in the close neighbourhood of the crura and footplate of the stapes in the oval window. Relatively speaking the aqueduct comes nowhere near the round window, the promontory, or the Eustachian tube.

This completes the summary of the tympanic segment.

We come now to the *petrous segment*, which may be divided into two sections, the *labyrinthine* and the *meatal* (Figs. 24, 25, 26).

The Labyrinthine Section extends between the lamina cribrosa

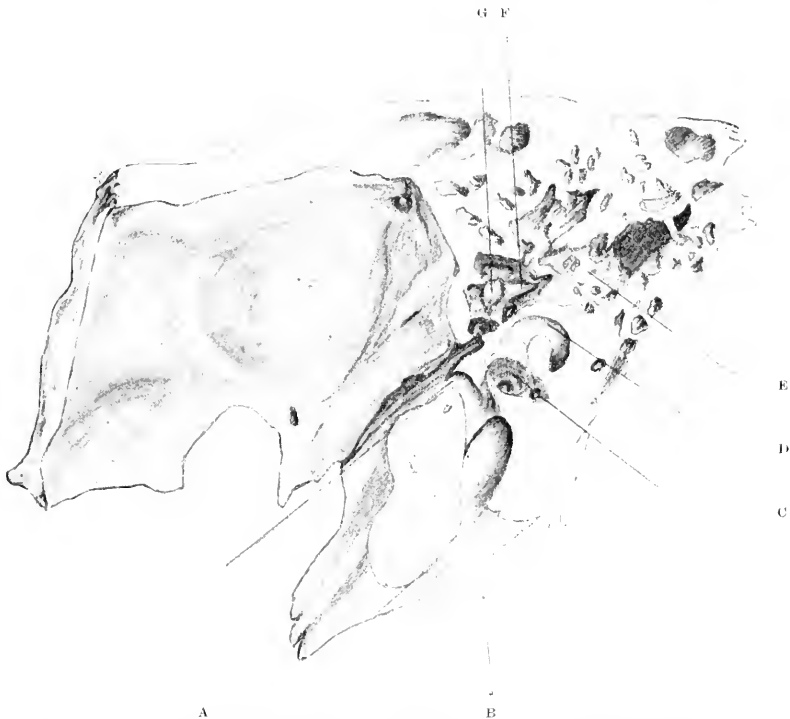


FIG. 24.—Horizontal section through the temporal bone just below the roof of the tympanum viewed from above. Highly cellular specimen. The section passes through the vestibule, but misses the cochlea. A marks the genu of the aqueduct; the labyrinth section is shown between the genu, and B, the internal auditory meatus. The fine canal for the superior vestibular nerve is visible to the left of C, the vestibule. D is the external semicircular canal. E. The mastoid antrum. F. The short process of the incus on the aditus floor. G. The head of the malleus. (Bone 31, right temporal, $\times 4$, female, aged ten.)

and the genu (Figs. 24, 25), which marks the junction of the tympanic with the petrous segment of the canal, and lodges in the recent state the geniculate ganglion. From the genu of the nerve in a forward direction is given off the great superficial petrosal nerve (hiatus Fallopii).

In all save one or two instances the region of the geniculate ganglion was roofed with bone. It is to be added that the angle of the aqueduct is here very acute—about 30° (Fig. 24).

The length of the labyrinth section of the canal in 39 adult bones was: Highest, 6 mm.; lowest, 2.5 mm.; average, 3.9 mm.; and in the first decade (10 bones available): Highest, 4.5 mm. (at two years); lowest, 2.5 mm. (at birth); average, 3.35 mm.

The labyrinth section, although gently curved towards the cochlea, pierces the dense petrous bone from genu to lamina cribrosa with the directness of a railway tunnelling a hill, independent of the contour of the upper surface of the bone. The canal here has a diameter of 1 mm. only, broadening out to from 2.5 to 3 mm. at the genu, and



FIG. 25.—Sketch of vertical section of petrous process of temporal through the internal auditory meatus and the Fallopian aqueduct. Note how the aqueduct debouches into the meatus, and note also its relations to the spirals of the cochlea below it. (Bone 41, right temporal, $\times \frac{1}{2}$, male, aged thirty-seven.)

narrowing down again to 1 or 1.5 mm. in the tympanum. I may take this opportunity of saying that among my other measurements I was careful, at all events in the first 30 or 40 bones examined, to measure also the diameter of the canal in its various segments. But when I found that the dimensions were practically invariable at all ages and in all circumstances I left off taking it.

The diameter measurements of the canal resulted as follows: Petrous, 1 mm.; genu, 2 mm.; tympanic, 1 mm.; pyramidal, 1 mm.; vertical, 1 mm.; and 2 mm. at the stylo-mastoid foramen.

The labyrinth section runs between the vestibule and the cochlea,

rather nearer to the cochlea, from the second turn of which it is separated by thin dense bone, about 0.5 mm. or less in thickness. This part of the cochlea lies in front of, medial to and below the Fallopian aqueduct (Figs. 25 and 26).

The Internal Meatal Section.—At the fundus of the internal

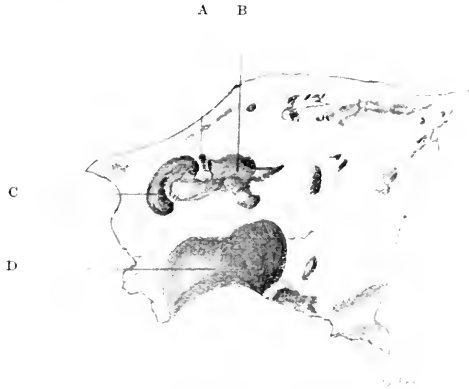


FIG. 26.—Section through the petrous at the lamina cribrosa. A is the start of the aqueduct of Fallopius, and beside it on the right is the foramen of the superior vestibular nerve. B is the vestibule, and the line ends just above an oval shaded area; this is the foot-plate of the stapes in the oval window. C is the second turn of the cochlea curving round the modiolus, the base of which is visible. D is the jugular bulb. (Bone 48, right temporal, slightly +, female, aged eighteen.)

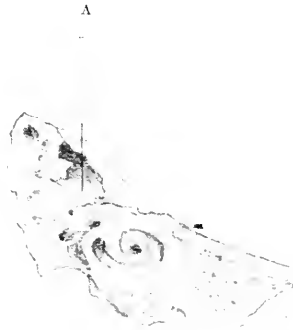


FIG. 27.—This specimen, a temporal, aged eleven, was cut in such a way as to show the relations of antrum, tympanic segment of aqueduct, oval window, and cochlea. A is the aditus ad antrum; the Fallopian canal is just below it. The other features are clear. (Bone 24, right temporal, very slightly +, male, aged four.)

auditory meatus the lamina cribrosa is "stepped" as it were, so as to form two sections, an inferior and a superior, the former being the more proximal (regarded from within) (Fig. 25). The lower receives the cochlear and inferior vestibular nerves; the superior lodges the facial and superior vestibular nerves (Fig. 26).

As may be demonstrated by passing a bristle into the canal from the genu, the labyrinth section of the aqueduct makes with the axis of the

cylindrical internal auditory meatus an angle ranging in the adult (26 bones valid) from 60° to 15° , the average being approximately 28° ; and in nine bones of the first decade from 50° to 32° , the average being approximately 42° (Fig. 24).

In order to estimate the total length of the facial nerve in the temporal bone there must be added to the measurements for length already given those of the internal auditory meatus from its entrance to

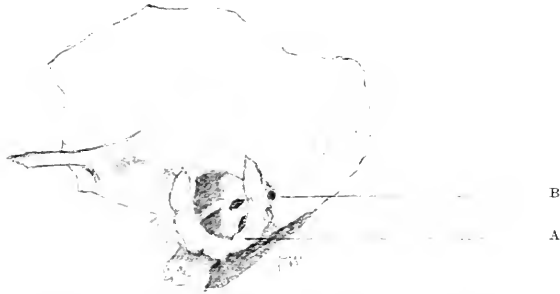


FIG. 28.—Left temporal bone at birth. A. Annulus tympanicus. B. Stylo-mastoid foramen. Note foramen ovale and niche of round window in the tympanum. (Pose natural, slightly reduced.)

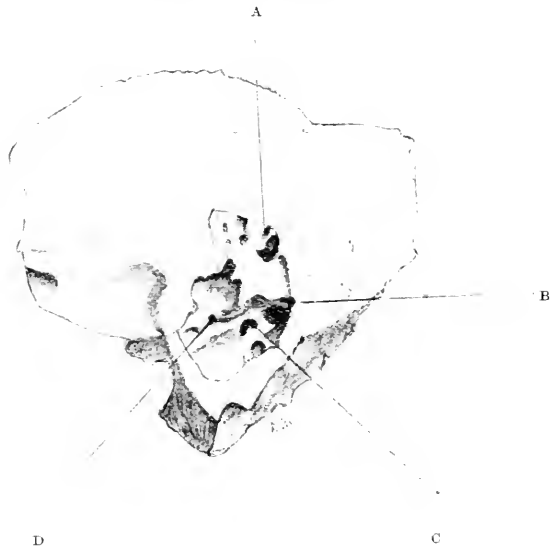


FIG. 29.—Left temporal bone at birth, outer cortex of cells, and part of annulus tympanicus removed. A. Cells. B. Stylo-mastoid foramen. C. Oval window. D. Tympanic segment of Fallopian canal close to genu. Note the bend or pyramidal segment. (Cf. radiogram.)

the cribriform lamina. This having been done, the total length of the nerve reads as follows:

In 40 adult bones: Highest, 3.9 cm.; lowest, 2.1 cm.; average, 2.45 cm.

In 10 bones of the first decade: Highest, 3.1 cm.; lowest, 1.7 cm.; average, 2.45 cm.

The Aqueductus Fallopii in Infancy and Childhood.

The following facts show that while there is a considerable difference in the canal before the age of two years, after that date, save in respect of the length of the vertical segment, the dimensions, proportions and dispositions are those of adult life.

In a word, the difference between infantile and adult Fallopian canals is postulated by the absence or presence of, and if present by the amount of, development of the mastoid process, and, to a less extent, of its cells.

Up to the eighteenth month of life the incompleteness of the formation of the mastoid process leaves the stylo-mastoid foramen without any bony protection, so that the facial nerve emerges from its canal on the surface of the skull. For the same reason, also, the foramen occupies a position relative to the pinna superior to that of adult life, or, to express the state of matters more accurately, in adult life



FIG. 30.—Line of projection and angle made with long diameter of meatus in temporal bone of infancy. Note small mastoid process barely concealing the stylo-mastoid foramen. The thick line is the line of the vertical. Contrast with Fig. 1. (Bone 21, right temporal, life-size, male, aged two, natural pose.)

the nerve emerges from its bony protection into the soft parts at a spot both deeper and more anterior than in early life. That being so, it is easy in making the incision for the mastoid operation in infancy to injure the nerve if the incision is prolonged as far down relative to the pinna as it is usually carried in adult life.

As Figs. 28 and 29 show, at birth the "vertical," which may be seen to extend from the stylo-mastoid foramen to the gentle curve which represents the right-angled curve of the pyramidal segment of adult life, runs almost exactly horizontally.

Fig. 31 shows the stylo-mastoid foramen and the vertical segment at the age of eleven months. The horizontal position of the mastoid segment at birth is already becoming more vertical, although it still shows a horizontal turn just before passing into the stylo-mastoid foramen.

Thus the mastoid segment of the canal is already visible at birth, measuring in length 2 mm. and almost exactly horizontal. At eleven

months it consisted in this specimen of two portions, one vertical, 4 mm. long, and one horizontal 1 mm. in length.

By the age of eighteen months it had become altogether vertical, measuring 4 mm., and the measurements after that up to the tenth year in length were: Highest, 10 mm. (in a bone of seven years); lowest, 5 mm. (at three years); average, 8 mm. (seven bones valid). A vertical of as long as 9 mm. was found in a bone of two years.

The projected *Line of Descent* in the infantile bone from the age of eighteen months onwards relative to the outer surface of the bone (Fig. 30) presented little difference from adult conditions, the same general description applying to both, with only two exceptions. In one bone (aged three years) the upper end of the vertical lay as much as 4 mm. below the suprameatal spine, and while the angle to the horizon



FIG. 31.—Tympanum and Fallopian aqueduct in a temporal at age of eleven months. A. Stylomastoid foramen; note right-angled turn of canal. B. Promontory; above and to its left are oval window, Fallopian aqueduct, and above and to the left of the latter the prominence of the external canal. The antrum is placed above the tympanum. (Bone 14, right temporal, slightly +, male, aged eleven months, viewed from without and from below.)

showed in most a forward inclination (highest, 105° ; lowest, 85° ; average, 92°) in one (aged seven years) a slight backward inclination was observed.

(To be continued.)

SOCIETIES' PROCEEDINGS.

ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

February 1, 1918.

President: DR. A. BROWN KELLY.

Demonstration on Rhinoplasty.—H. Delf Gillies.—Of all the plastic operations of the face rhinoplasty is the most difficult, except

perhaps otoplasty, of which I have had no experience. The reason why these two sections of the work are so difficult is because they deal with the repair of "end-organs."

In approaching the subject of the demonstration, the problem is to be solved from the point of view of the three main elements of the normal nose—that is to say: (1) The outside covering, the skin; (2) bony and cartilaginous framework; and (3) the mucous membrane lining.

Whatever element of the nose has been destroyed has to be replaced. In certain classes of case—for instance, in burns of the nose—it is necessary to provide the skin covering only. In another large class in which the skin covering and the mucous lining are more or less intact, the provision of the supporting element will suffice to restore the organ, whereas in the majority of gunshot injuries there is loss of all three elements. This loss may be partial or complete, and for the purposes of discussion I have divided the "loss of nose" into various groups, according to the portion of nose lost.

In discussing these classes, I am illustrating the various methods employed by myself and my colleagues, whether the results have been satisfactory or indifferent. The first type is that of loss of portion of the tip, or of the alæ.

The photographs of six different methods of repair were shown by means of the epidiascope. For the larger loss of the tip the Keegan-Smith Indian method was preferred. The six cases include an excellent result (by Capt. G. Secombe Hett, R.A.M.C.) with a "Y"-shaped cheek-flap to form one ala and columella, and one successful case of skin-grafting method to form an ala—by Lieut.-Col. Newland, D.S.O., of the A.A.M.C.

The next category demonstrated the loss of the upper quarter of the nasal bridge. The lining mucous membrane is of no importance in this situation, and both cases illustrated were treated by the same method. An osteo-periosteal flap was turned down from the frontal region to give support to the skin-flap, which was advanced from the forehead.

For the next class of injury, loss of the upper half of the bridge of the nose, with two cases of mine and one of Capt. Hett's, three methods were illustrated. In the first, cheek-flaps were advanced over a septal swing, as a preliminary operation, with the late embedding of a cartilage graft. In the second, the support was supplied by osteo-periosteal graft from the tibia, and was not so satisfactory. The third, Capt. Hett's, had the cartilage support embedded in the flap in the frontal region, the under surface of which was epithelialised before it was brought into position.

Losses of the lower third of the nose were next demonstrated, and two main methods were advocated—one a modification of the Keegan Smith operation, and the other an original design of my own. A series of mechanical supports were also illustrated, showing the methods adopted in the early stages of nasal injuries. Three cases of superior maxilla fractures, with loss of the supporting structure, were treated by implantations of cartilage.

The pug-nose type was the next group defined, and its solution solved in the following manner: Cartilage is embedded under the skin of the upper part of the nose, which is subsequently swung down as a combined skin and cartilage flap, the skin lining the new nose, and the cartilage is tucked in behind the remains of the tip to retain the latter in its correct position. The operation is completed by frontal flap in the usual manner.

The importance of taking a spare piece of cartilage and embedding it under the skin at the time of the rib operation was illustrated. This method (cartilage carriers) saves a double rib operation in many a case.

When the entire nose has been destroyed the difficulties are correspondingly increased, and several cases of partial failure were shown. The successful ones were those in which provision of a mucous or skin lining to the new nose had been adequately made.

Capt. J. L. Aymard's attempt to make a nose by a long chest flap was illustrated, as well as a case of severe burn of the face, in which I had grafted a large chest-flap on to the face, covering the nose.

The following are Details of a Case of Subtotal Rhinoplasty also demonstrated at this Meeting and that of November 2.

1719 Pte. D——, 17th Royal Fusiliers, aged nineteen. Wounded, France, February 17, 1916: admitted May 10, 1916.

Condition: There was complete loss of all the tissues of the nose, bone, skin and cartilage, except the left nostril, portion of the tip, and a small piece of the anterior end of the septum—about $\frac{3}{4}$ in. triangular.

Methods employed: (1) Building up the bridge and providing a mucous membrane lining for the new nose by turbinate grafts. Operation, June 20, 1916: Left middle turbinate detached from behind and stitched to the remains of the septum. Operation, August 9, 1916: Right inferior turbinate detached from behind, leaving its anterior end attached and superimposed upon the freshened surface of the left middle turbinate (new position). Operation, September 19, 1916 (local anæsthesia): The attached pedicle of the right inferior turbinate was cut through and stitched on to the freshened surface of the anterior portion of septum remaining.

(2) Rhinoplasty (Indian method): Operation, October 11, 1916. Return of pedicle: Operation, October 28, 1916.

(3) Supports used for this frontal flap: (a) Celluloid, October 11, 1916: A perforated celluloid plate was stitched into position to form an additional support to the bridge between the turbinate and the frontal flap. Similarly, a small bent celluloid strip was stitched into position to form a support for the right ala. This was unsatisfactory and had to be removed on January 29, 1917. (b) April 17, 1917: Implantation of cartilage (heterogeneous). This was unsatisfactory owing to its becoming absorbed. About the third week after the operation the nose became swollen, and about a drachm of pus was evacuated. A few drops only of pus could be squeezed out for the next few days, and the further healing was uninterrupted. On examination, after two months, the cartilage had become absorbed. (c) September 18, 1917: Implantation of cartilage (autogenous). This cartilage was taken from the seventh costal on the right side—length about $1\frac{3}{4}$ in.; it was split longitudinally, but not quite through, so that it was, when inserted, straddled as an inverted V.

(4) Small corrections have been made of the right ala, but this part is still incomplete.

Total Loss of Hard Palate and Exposure of the Antral Cavities in the Mouth.¹—W. Kelsey Fry and G. S. Hett.—As a result of an

¹ The cases described on pp. 346-348 were demonstrated at the meeting of the Section held November 2, 1918.

aeroplane fall this officer, Lieut. W——, R.F.C., was struck in the mouth by the handle of his machine-gun. He was operated on as an emergency case in France, the operation consisting in detaching pieces of the hard palate and alveolar pieces of the jaw, with their contained teeth, which were literally hanging by a thread. On examination it will be seen that the whole floor of the nose is absent, that the outer wall is also gone on the left side, exposing the cavity of the antrum, which is occupied by a single polypus. On the right side there is an opening into the antrum below the inferior turbinal. Both antra are suppurating.

The case is shown from two points of view: (1) As a double traumatic antral suppuration, with the loss of the floor of the nose; (2) from the dental point of view.

Capt. Fry, surgeon-in-charge of the dental department at the Hospital for Facial Injuries, Sidcup, is exhibiting models and diagrams showing the method of fitting a denture, and making use of the floor of the antrum and the remains of a nasal crest as means of attachment for an artificial palate. A pastel drawing of the condition, by Prof. Tonks, F.R.C.S., is also exhibited.

DENTAL NOTES ON LIEUT. W——, R.F.C., BY W. KELSEY FRY, M.C.

This case shows loss of the entire hard palate, together with the alveolus on both sides. The whole of the soft palate is present. It is of interest, as it demonstrates the difficulty of supporting the prosthetic appliance necessary. At present the undercuts to which we look for support are inefficient. It also shows how important it is for the oral and dental surgeons to work in conjunction. The supports to be used are: (1) laterally, floors of the maxillary antrum; (2) anteriorly, a ridge consisting of the anterior nasal spine and upper part of the pre-maxilla.

The patient is now wearing a hollow box made to fit the cavity, the shape of which has been obtained from a plaster-of-Paris impression. The permanent apparatus is to be made as follows: A mould will be made to fit into the cavity. It will carry three movable processes, one for each opening into the maxillary antra, and one for placing above the anterior ridge. The patient will be able to place the mould in position and then turn the processes outwards, thus preventing the mould dropping. A denture will be attached to the mould by two split pins, which will be received into two slots provided for these pins in the thickened posterior part of the mould.

(For diagrams see *Proc. Roy. Soc. Med.*, Laryng. Sect., February, 1918.)

Case of Total Loss of Nose, illustrating the Method of Advancement of the Turbinals.—G. S. Hett.—Lieut. S——. This is a case of total loss of nose due to gunshot wound. There is a considerable sinking in and added loss of tissue of the left side due to the loss of the nasal process of the left superior maxilla. In this case Major Gillies has placed the costal cartilage graft on the forehead. The forehead flap is to be brought down shortly to form the new nose. The case shows an attempt to build up the inside of the nose, and to make use of the turbinals and septum to diminish the undue size of the cavity and to form a mucous lining to the new nose. All four turbinals have been advanced and the upper septal swing has also been made use of.

Operation, September 1, 1917 (Lieut. Hett): Intra-nasal opera-

tion preparatory to plastic operation for complete new nose. The left middle turbinal was detached from its connections posteriorly and swung forward, so that its posterior end was brought in contact with and attached to the anterior end of the left inferior turbinal. The right inferior turbinal was similarly treated and its posterior end swung up and attached to the root of the nose. The cartilaginous septum was detached from the floor of the nose and also from the vomer, the ethmoid remaining attached by a pedicle at the root of the nose. It was rotated and placed laterally so that it bridged across the space between the

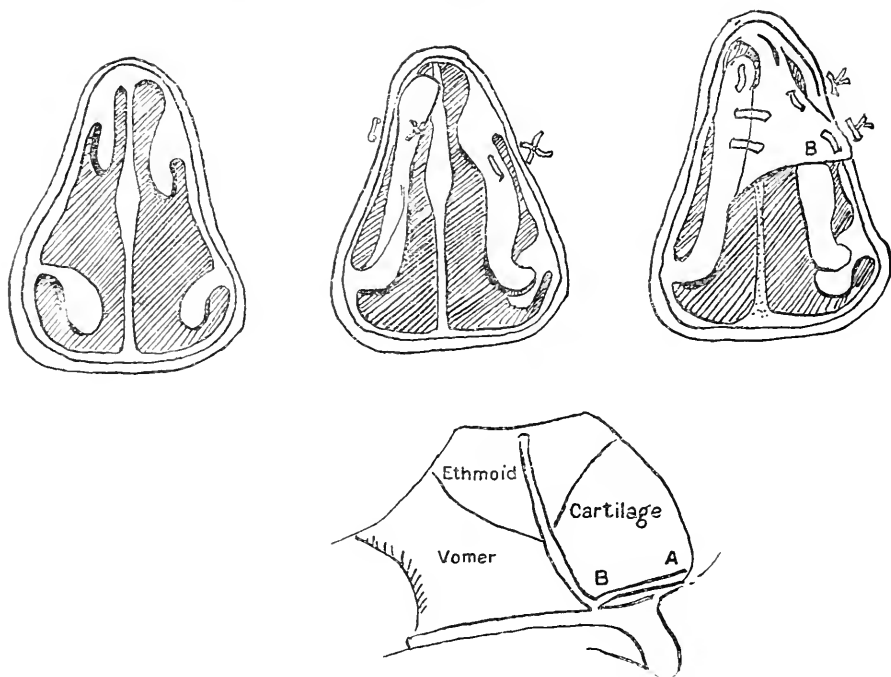


Diagram illustrating turbinal shifts and upper septal swing.

right inferior turbinal and the left middle, to both of which it was attached by catgut suture.

October 2, 1917: Following last operation there is now a mass of tissue filling up the cavity to the left of the middle line.

Operation, October 2, 1917 (Lieut. Hett): The posterior end of the right middle turbinal was found to be firmly attached to the septum. Its anterior attachment was now separated and swung downwards to floor of the nose and attached there.

(To be continued.)

ABSTRACTS.

Abstracts Editor—W. DOUGLAS HARMER, 9, Park Crescent, London, W.1.

Authors of Original Communications on Oto-laryngology in other Journals are invited to send a copy, or two reprints, to the JOURNAL OF LARYNGOLOGY. If they are willing, at the same time, to submit their own abstract (in English, French, Italian or German) it will be welcomed.

PHARYNX.

A New Instrument for Tonsillectomy.—Harry L. Baum. "The Laryngoscope," February, 1919, p. 96.

Baum takes it as fundamental that tonsillectomy may be best done, in the majority of cases, by the employment of the cold wire snare without preliminary dissection. His instrument is modelled after the principle of the Mackenzie tonsillotome with the handle at an obtuse angle from the shaft. No. 9 piano wire is threaded into the slide from the sides and pulled down after threading until it fits into the grooves cut on either side of the trough of the instrument. The convexity of the wire loop is then pushed up through the throat of the instrument until it disappears in the groove of the fenestrum. No previous dissection is necessary. The instrument is introduced exactly as if for guillotine enucleation, and the tonsil is forced through the fenestrum by means of judicious digital manipulation. When the tonsil is entirely through the fenestrum it is fixed in that position by pulling the wire down firmly with the first and second fingers on the trigger of the instrument. The operation is completed by turning down the threaded wheel, thus pulling the slide back and gradually tightening the wire until separation is complete. This can be done as slowly as desired. A slow separation predisposes less to bleeding than a more rapid one. The tonsil remains in the grasp of the instrument after removal as a few fibres of tissue are drawn into the throat of the instrument by the wire. Before proceeding to the other side the slide is pushed back to its original position, carrying the wire into place as before. The size of the fenestrum is 21 by 16 mm.

J. S. Fraser.

NOSE.

Dislocation of the Inferior Turbinate in the Treatment of Nasal Obstruction.—A. Pugnat. "Rev. de Laryngol.," No. 10, 1919.

A short note recommending fracture and displacement laterally of the turbinate in place of cauterisation and turbinotomy. The advantage claimed for it over the other two procedures is the absence of raw surfaces and septic complications resulting therefrom. Excellent functional results are said to follow this method. *J. K. Milne Dickie.*

On the Infective Origin of Ozæna.—U. L. Torrini. "Arch. Ital. di di Laringol.," Anno xxxviii, fasc. 3-4, 1919.

The author has carried out a series of inoculation experiments with the *Bacillus fetidus ozæne* of Perez on rabbits. His results are more or less negative. The injection into the marginal vein of the ear of a broth culture of *Bacillus fetidus ozæne* did in no case produce death in rabbits even of the smallest size, and on the whole was well tolerated. In one or two cases there was a moderate rhinorrhœa lasting a day or two, and a

bacillus was found in the nose with characteristics similar to those of *B. Perez*. There were no bad effects from the inoculation, and the animals even increased distinctly in weight. In *post-mortem* examinations no alterations in the nose could be discovered, either a short or long time afterwards. There was nothing to note in the other organs. In newly-born animals whose mothers had previously been inoculated there was no sign of any pathological condition in the nose.

J. K. Milne Dickie.

Bacteriological and Clinical Aspects of Infection of the Accessory Sinuses.—J. W. Babcock. "The Laryngoscope," July, 1918, p. 527.

The material used consisted of the mucopus obtained from 100 cases with infected sinus or sinuses treated in the private practice of Dr. Coakley. Anaërobic cultures were made in those cases in which a foul odour was present, while smears were made as a routine. The bacterial findings in the smears very closely agreed with the subsequent findings on culture. The cytological findings confirm the work of Darling, who found that the presence of an excess of lymphocytes, especially when coupled with the presence of streptococci, renders the chance of cure without a radical operation distinctly small. Of the 100 cases 53 were acute and 47 chronic.

In the acute cases the following bacteria were found: *Pneumococcus*—type not determined, 5; Group II, 9; Group III, 3; Group IV, 15; total, 32. *Streptococcus*—hæmolytic, 3; non-hæmolytic, 2; total, 5. *Staphylococcus*—*aureus*, 13; *albus*, 17; total, 30. *B. influenzae*, 4; *M. catarrhalis*, 2; diphtheroid bacillus, 2; *B. coli communis*, 2; *B. fæcalis alkaligenes*, 3; *B. aureus*, 1; *B. proteus*, 3; *B. subtilis*, 1; no growth, 4. This makes eleven different organisms occurring eighty-five times.

The chronic cases showed: *Pneumococcus*—type not determined, 1; Group II, 1; Group IV, 4; total 6. *Streptococcus*—hæmolytic, 15; non-hæmolytic 4; total, 19. *Staphylococcus*—*aureus*, 18; *albus*, 20; total, 38. *B. influenzae*, 2; *B. mucus capsulatus*, 5; diphtheroid bacillus, 4; *B. coli communis*, 2; *B. fæcalis alkaligenes*, 3; *B. aureus*, 3; *B. proteus*, 1; *M. tetragenus*, 3; *B. subtilis*, 1; no growth, 1. This makes thirteen different organisms occurring ninety times.

Clinical aspect (cases grouped according to classification of Turner and Lewis). Acute cases:

Pneumococcus group, 32: all of the cases were cured by lavage; average, eight and three-quarter days. *Streptococcus* group, 5: four cases were cured. *Staphylococcus* group, 22: all the cases were cured. External incision and partial exenteration of ethmoid was performed on one case, a child aged five, who had an extremely violent infection with orbital cellulitis.

Chronic cases: *Pneumococcus* group, 6: three were cured (50 per cent.) and three improved. Two operations were performed. *Streptococcus* group, 19: sixteen were cured and three were improved. Eight operations were performed. *Staphylococcus* group, 21; thirteen cases were cured and eight improved. Nine operations.

With regard to the pathway of infection Babcock's findings do not agree with those of Turner and Lewis, who thought one-third of the cases of antrum infection were of dental origin. Of 109 infected antra only eight seemed to have any connection at all with infected tooth-roots, and in none of them was any connection between the antrum and the infected area established on removal of the tooth.

J. S. Fraser.

Anaphylaxis due to Pollen Protein: Results of Treatment.—William Scheppegrell (New Orleans). "The Laryngoscope," December, 1918, p. 853.

Scheppegrell states that hay-fever is always due to the inhalation of pollens, and that only the wind-borne pollens are responsible for the attacks. Insect-pollinated plants, such as roses, golden rods, honeysuckles, chrysanthemums, lilies of the valley, daisies and strawberry blossoms can be eliminated. Spasmodic vasomotor disturbances may be due to easily avoidable causes, *e. g.* direct inhalation of certain flowers, of the emanations (dandruff protein, etc.) from horses, dogs and cats. These form less than 1 per cent. of the number of "hay-fever" cases. In some persons the ingestion of certain articles of food causes anaphylaxis, of which hay-fever symptoms may form a part. The prophylaxis in these cases is the avoidance of the special exposure which causes the anaphylactic symptoms.

Hay-fever victims represent about 1 per cent. of the population of the United States. Hay-fever is due to the absorption of the protein contents of inhaled pollens, and the toxin-like substance liberated by the proteolytic action of the cells on the pollen protein. In 99 per cent. of persons the proteolytic enzymes digest the protein of the inhaled pollen so slowly that the products are absorbed without disturbing the normal functional equilibrium. In the hay-fever subject, however, the entrance of the pollen proteins is followed by such rapid digestion that the products are not neutralised and act as a toxin.

Most hay-fever patients have some form of pruritus associated with their symptoms. Asthma is present in 40 per cent. of cases. The distribution of the nerve branches from the sphenopalatine ganglion over the turbinates and its connection with the pneumo-gastric nerve is one of the principal causes of this frequency.

Treatment.—A series of 312 cases were treated by pollen extracts, bacterial vaccines or a combination of these. The diet was not restricted. *Result:* Seasonal cures, 45 per cent.; marked improvement, 42 per cent.; unimproved or the treatment discontinued, 13 per cent. In the cured and improved cases, pollen extracts alone were used in 41 per cent., pollen extracts and bacterial vaccines in 54 per cent., and vaccines only in 5 per cent.

Diagnostic Test and Prophylaxis.—This consists in injecting into (not under) the skin of the forearm five units of the pollen to be tested (grass pollens in the spring and ragweeds in the fall). After the character and degree of the sensitisation has been determined, the preventive treatment is commenced. If the patient is sensitive to both grass and ragweed pollens, the preventive treatment for the grass pollens is commenced six weeks before the grass season opens, and similarly for the ragweed pollens. Scheppegrell does not consider it advisable to use the combined pollens. Pollen extracts are usually injected two or three times weekly and gradually increased to 30 to 50 units. Medium doses have given best results. Large doses may produce severe reactions, also eczema, urticaria and angioneurotic oedema.

Curative Treatment.—After the attacks have developed, better results are obtained from a combination of the pollen and vaccine therapies. Stock vaccines were used in most cases, made from various proportions of *B. Friedlander*, *M. catarrhalis*, pneumococcus, *Streptococcus pyogenes*, *Staphylococcus aureus* and *albus*. As soon as the acute attack has subsided, the extract of the pollen responsible for the hay-fever is

injected, the dose being 5 to 20 units. In all cases the treatment is discontinued when the pollenometric records show that the atmospheric pollens responsible for the attack have disappeared. In the following season the diagnostic test decides whether the patient is still immune. In spite of the large number of injections there have been no cases of infection nor of anaphylactic shock.

Hygienic measures are as important as in typhoid fever and malaria. Patients are given charts of their neighbourhood, with instructions to locate lots that are infected with weeds. The marked charts are sent to the City Board of Health, which notifies the owners to cut the weeds under penalty. The New Orleans Board of Health reduced the number of spring hay-fever cases to less than 50 per cent. Operations for non-inflammatory nasal obstructions are of benefit in hay-fever in only a small percentage of cases, and are rarely advisable unless indicated for other reasons. Cauterisations have caused more harm than benefit. Urinalysis should be made in every case, and when there is acidosis or other abnormal condition the usual measures applied.

J. S. Fraser.

The Blood-Clot Dressing in Frontal Sinus Surgery.—George E. Davis.

"The Laryngoscope," January, 1919, p. 5.

Blake of Boston and Reik of Baltimore introduced the blood-clot method of healing after the simple mastoid operation. The physiological basis of the blood-clot dressing depends on the well-known antiseptic powers of normal circulating blood, which is enhanced when it coagulates or clots. Second, the blood-clot fills in the dead space and forms a framework for the reconstruction of the particular tissue in which it is lodged. The blood-clot loses its antiseptic power in about forty-eight hours; hence it is most important that *thorough exenteration* of all diseased tissue be carried out.

Case record.—Male, aged thirty-nine. Chronic frontal sinus suppuration with orbital complication. Anterior wall floor and bridge all removed, as the sinus was very large. Marked deformity seemed inevitable. The wound was packed for twenty-four hours before "blood-clot" treatment was commenced; thereafter the wound healed completely by first intention. The patient left at the end of a week. The only intranasal treatment administered was the introduction of carbolated vaseline night and morning. Result: the contour of the orbital arch was preserved with almost no deformity whatever.

J. S. Fraser.

Report of a Case of Meningitis following Operation on the Middle Turbinate, with Autopsy Findings, showing an Old Perforation of the Cribriform Plate of the Ethmoid.—T. J. Harris. "Annals of Otology," xxvii, p. 1241.

A young officer, aged twenty-six. History of fractured nose from football. Obstruction from right enlarged middle turbinate found on routine examination. Removal of cystic middle turbinate. Discharged from hospital on third day. Five days later, headache and vomiting. Died next night. Autopsy showed acute fibrino-purulent pneumococcal meningitis. Smooth-sized round hole, 5 mm. in diameter, to right of crista galli, with a necrotic centre. A note is appended of deaths from turbinate operations. [The case is an illustration of the risk attached in allowing nasal operation cases to leave hospital too soon after operation.—M. Y.]

Macleod Yearsley.

LARYNX.

The Ætiology of Speech Defects.—May Kirk Scripture. "The Laryngoscope," January, 1918, p. 12.

The writer believes that there are about half a million speech defectives in the United States. This number is much in excess of the number of the blind, the deaf and the dumb, the insane or the feeble-minded. During the past year or two numerous cities in America have started systematic arrangements for speech improvement in the public schools. Slovenly language should be no more accepted than slovenly manners or dress. Scripture states that the average American voice is shrill and the speech careless compared to the voice and speech of an Englishman, and that the vicious American speech habits are a serious handicap to national efficiency, as they impair the speed and accuracy of communication in business and social life. A general insistence on decent speech would promote better hygiene of the entire vocal tract and would lead to the correction of physical irregularities. A people that has learned the importance of the care of its teeth should not be hard to convince of the importance of the care of its utterance.

With the collaboration of Eugene Jackson, Scripture has prepared a series of exercises—simple proverbs, poems and stories—but has avoided trick sentences which do not occur in everyday life. They have divided the speech mechanism into its four constituents—breathing phonation, articulation and thinking—and have provided exercises not only for each of these, but also for bringing about a proper co-ordination of the four. There would be less need for the correction of speech defects if attention to distinct enunciation, articulation, timbre and rhythm were taught in the first year of school life. This attention should be started in the home and parents should insist upon distinct utterance—no baby-talk, no elision of syllables, no slang. Nervous habits should not be allowed to creep into speech.

In their Speech Research Laboratory at Columbia University, Scripture and Jackson are endeavouring to study scientifically the causes and effects of speech disorders. (1) Measurements are being taken of the movements of the muscles during speech: both thoracic and abdominal breathing curves are taken along with the pulse. Movements directly involved in the forming of speech are measured by three tambours. A U-shaped piece fits tightly against the larynx and records through a lever, while another lever fits under the chin. A silver mouth-piece is also introduced, which fits the roof of the mouth, and a diaphragm stretched across this so that the slightest movement of the tongue is recorded. The time is taken in seconds, twentieths and one hundredths of a second. The writers are able to make eight records at one time. (2) On the supposition that "the set of the mind" or atmosphere under which a person is speaking is a powerful factor in speech, the writers propose to create artificial atmospheres and mark the effect on speech. Efforts to introspect our speech are almost futile and yet we are largely dependent upon this method. (3) Attention is being paid in the clinic to the vision, hearing, mouth, nasal cavities, nervous system, etc. Under these conditions 4000 speech cases were treated during the year 1915-16.

The human vocal instrument has four elements: First, a motor—the respiratory muscles and lungs; second, a vibrator—the vocal cords; third, a resonator—the throat, mouth, and the nasal and head cavities (these three being common to all musical instruments); and fourth, an articulator—the tongue, lips, cheeks, teeth and palate, which all other

instruments lack. Qualities of tone expressing feelings such as grief or joy are made possible with this human instrument because of the interaction of the four parts. The writers see not only the patient but also his parents, and can thus note that hereditary diseases are prevalent and are often the causes of speech defect. They take advantage of the clinics of neurology, general medicine and laryngology for the investigation of their cases. No progress can be made with the correction of speech disorders until the physical condition of the patient has been thoroughly diagnosed and prescribed for. They remark, however, that speech disorders are not the only diseases which may be purely functional, and there is nothing more effective in the treatment of such cases than the influence of a strong personality. Where poor habits of speech have persisted for years the handicap is great, as the patient's whole character becomes morose, introspective and cynical. The writer holds that the capacity of the stutterer to speak is related to certain states of mind, and that a permanent impairment of the nervous system is present. The writer distinguishes between (1) stuttering and (2) incorrect speech, which they also call lisping, mispronunciation or stammering. This latter form of speech defect may be anatomical or developmental. The former is due to malformation of one or more organs of articulation, while the developmental stammer is caused by incorrect functioning—as in the baby-talk of normal children beyond the age of six years. Scripture recognises such conditions as cluttering, negligent speech, nasality, mutism, uvular disturbances, cleft palate, chronic enlargement of the tonsils, etc.

The causes of speech defects are classified as follows: (1) Physical; (2) mental; (3) moral; (4) environmental; (5) hereditary. Foremost among the physical causes is a poorly developed sense of hearing. Quite frequently the trouble lies in the tongue itself, and, apart from slight operation, tongue gymnastics will do much in effecting a cure. Scripture also mentions rigidity of the jaws, a highly arched palate, overlapping of the jaws and irregularities of the teeth. The latter may be greatly helped by orthodontia. Seventy per cent. of New York school children have very poor teeth. With regard to cleft palate, Scripture finds that in many cases a prosthetic restoration of the tissue undoubtedly gives better results than operation. She finds that nervousness is a great cause of speech troubles, and that stuttering may be only the symptom of a generally poor state of the nervous system resulting from shock, illness, malnutrition, over-work, or too rapid growth. Scripture agrees with Makuen that operation is often advisable for the relief of nose or throat trouble in stutterers.

A large number of cases of defective speech could be avoided entirely if proper care were exercised. The slipshod, careless speech that is heard among teachers is imitated by their pupils. Scripture gives the case of a boy, aged ten, who stuttered most pitiably and was afflicted by chorea. He had been scolded and whipped repeatedly by his parents so that he had become afraid of everyone he met. Under care it was not long before he lost his fear and his stuttering soon vanished. There are too many teachers who seek to rule their classrooms by fear. Children's minds are active, but unfortunately their command of language does not keep pace with the development of their thinking powers. They hesitate, become impatient, and sometimes stutter, especially if predisposed to nervousness. Previous failures disturb their mental condition. They are seized with "stage fright" before a single person. "When young children hesitate from inadequacy of verbal power, stop them at once.

Tell them to think what they are going to say before they say it. Insist that they say it slowly and with continuity. Children are infinitely more emotional than adults. We must seek a cure in the proper training of the emotions—self-control."

At the age of adolescence sex-consciousness comes into existence. Social practice has forced the child to maintain silence on all things sexual. The periods at which stuttering most frequently takes place (at at the beginning of school life (fear) and at the adolescent age self-consciousness). There is a marked increase in the number of cases of speech defects, notably stuttering, shortly after the beginning of school life. School life has made a virtue of immobility and limitation of speech, but the child's welfare requires movement and free speech, or at least no unnecessary repression. Teachers report that stutterers who spend their school vacation in the country are much improved when they return, but are as bad as ever a few weeks after the opening of school. The prevailing curricula impose a severe nervous strain upon the child, and nervousness almost invariably shows its symptoms in one's speech. Children who stutter should, as far as possible, be taught separately. They should also be kept from association with adults who stutter, for, consciously or unconsciously, they will imitate.

Mrs. Scripture has also articles in the February, March, May and June numbers of "The Laryngoscope" as follows: "Diagnosis of Speech Defects," February, 1918, p. 78; "Stuttering and Stammering (Lisping)," March, 1918, p. 166; "Aphasia," May, 1918, p. 408; "Abnormal Voices: Falsetto, Nasality, Hoarseness, Cleft Palate Speech, Choreatic Speech, Anarthria, The Voice of the Deaf and the Mental Deficient," June, 1918, p. 457.

J. S. Fraser.

Stenosis of the Larynx and Trachea following Diphtheria.—Lynah.

"The Laryngoscope," September, 1918, p. 629.

Lynah classifies the stenoses as follows: (1) Neurotic; (2) spasmodic; (3) traumatic; (4) pathologic.

Neurotic.—There is a marked neurotic element which accompanies all cases of laryngo-tracheal stenosis. The fear of having an intubation tube or tracheal cannula removed promotes excitement, especially in children. It is much easier for such a child to breathe through a properly fitting tube.

Spasmodic.—Spasm of the glottis is usually the result of wearing an intubation tube for a long period. The wide neck tube virtually acts as a splint and disturbs the balance of power between the adductors and abductors. The abductors become fatigued and adductor spasm is the natural result. To overcome this spasm an extremely narrow neck tube with a long antero-posterior lumen should be used. This type of tube allows for some movement of the vocal cords. In cases in which digital intubation has been constantly performed, the writer has been able to deceive the patient by removing the tube by direct inspection and immediately introducing a small tracheoscope or bronchoscope between the cords. After a few minutes the tracheoscope is gradually withdrawn. The child almost invariably remains permanently debubated. Several of these children were not aware that their tubes had been removed, and if the nurses asked them if they wanted the tubes removed they immediately became greatly excited and very dyspnoic.

Traumatic.—(a) Intubational: Faulty intubation is often one of the primary causes of chronic post-diphtheritic stenosis. Direct inspection may show (1) the hole which has been driven into the laryngeal

ventricle, or (2) a fracture of the cricoid cartilage, (3) intubation ulcers when the retention swell at the cricoid cartilage was too thick for the narrow lumen at that level. Tubal pressure along with the necrotic infiltrative diphtheritic process is responsible for necrosis of the cricoid cartilage, and therefore Lynch prefers a long, narrow-lumen tube with a bulbous tracheal end. (b) *Tracheotomy*: Chronic laryngeal stenosis has followed tracheotomy just as frequently as it has followed intubation. Tracheotomy is often performed too late and is made a stab emergency operation. (As a means of relieving dyspnoea reintubation frequently fails even in the hands of the most skilful intubator.) In the rapid stab emergency tracheotomy the cricoid and even the thyroid are often divided, while at times the posterior tracheal wall is severed and the incision carried into the œsophagus. Tracheotomy, performed properly and with plenty of time, is one of the most life-saving operations. Though tracheal cannular ulcerations are extremely rare, anterior and posterior spur formations are frequent, especially when an oversize cannula is used.

Pathologic.—Diphtheria is a dissecting necrotic disease, and upon the duration and degree of involvement of the larynx and trachea depend the subsequent changes. At the same time traumatism by instrumental means is also largely a contributing factor. The following pathological lesions are usually present in the cicatricial types of chronic stenosis. (a) *Edema*: Edema, when supraglottic, usually involves the aryteno-epiglottic fold and the ventricular bands. The œdema is much more firm than that from other infectious causes. The greatly thickened ventricular bands come together as soon as the tube is removed. When the œdema is due to the head of the tube being too large a very flat-headed tube should be introduced. Gentle galvano-puncture will also be of great aid in relieving this condition. When the œdema is confined to the subglottic region the galvano-cautery will cure the great majority of cases. The writer does not perform tracheotomy as a preliminary. He prefers to use a small tracheoscope with a long slanting end and a very fine cautery. As there is always some reaction Lynch recommends reintubation of the patient, using a tube with a very flat head and narrow neck with an olive bulbous tracheal retention swell. (b) *Polypoid masses*: These may be supraglottic (ventricular bands and base of the epiglottis) in retained tube cases, but they are also found in the cricoid region, especially following perichondritis. Masses which hang over the lumen of the tube and cause valve-like obstruction to inspiration should be removed while the tube is *in situ*. (c) *Decubitus ulcers*: These are rare when a proper-fitting, under-sized tube or cannula is used. They are frequent when tubes with a large retaining swell are used to stop the constant coughing up of the tube. (d) *Paralysis* (? crico-arytenoid ankylosis): Post-diphtheritic paralysis of the motor nerves of the larynx is an extremely rare condition. Crico-arytenoid ankylosis and infiltrations have been frequently mistaken for paralysis. The writer examined by direct means 100 cases of severe nasal and pharyngeal diphtheria with toxic post-diphtheritic paralysis, and in each instance the motor nerve of the larynx was seen to be in good working order. The superior laryngeal nerve was, however, involved, and there was profound local anæsthesia. These patients had considerable difficulty in coughing up thick, tenacious mucus for the explosive cough reflex was lost. The patient practically drowned in his own secretions. (e) *Perichondritis and chondritis*: In severe cases perichondritis and chondritis, especially at the cricoid level, are the chief factors in causing persistent coughing up of the intubation tube.

Frequently peri-laryngeal abscesses give the first warning that the cartilage is becoming destroyed. The arytaenoid cartilages may also become necrotic. In most cases of post-diphtheritic laryngeal stenosis one finds that there has been a period of persistent auto-extubation from the first to the fourth week after the primary diphtheritic infection. Severe cases who survive invariably become chronic. After the destruction of the cartilage the areas of perichondrium which remain endeavour to build up the support. The cricoid ring is in part converted into bone. (f) *Metaplastic and endochondral bony formations* occur in almost all of the cases when there has been extensive chondritis and perichondritis.

The writer tries all of the simplest methods first before any radical procedure is attempted. In cases with complete laryngo-tracheal stenosis laryngostomy is the best and only means of cure. The voice is much better in cases cured by intubational dilatation provided narrow-neck tubes are used. The article is well illustrated.

J. S. Fraser.

Stereoscopic Photography of the Larynx.—J. Garel. "Rev. de Laryngol.," No. 11, 1919.

The author describes in detail his apparatus for taking stereoscopic photographs of the larynx. It is small and compact, and has the advantage that the operator can watch the larynx at the exact moment when the snapshots are being taken. Several photographs are shown.

J. K. Milne Dickie.

EAR.

The Pathology of Middle ear Tuberculosis.—B. Agazzi. "Monatsschr. f. Ohrenheilk.," 48 Jahrg., H. 5, 1914.

The writer has examined the temporal bones in six children dying of general tuberculosis, of which four were of the acute miliary type. In the first, on histological examination, the tympanic cavity, mastoid cells and the bone were the seat of caseous tuberculosis. There were no signs of tubercle in the tube except in the bony part. The primary lesion in this case was the parotid gland of the same side. The writer believes that the infection was direct through the bone. In the second, one of acute miliary tuberculosis, there was an acute streptococcal otitis media. The third case, one of tubercular meningitis, had also an acute streptococcal otitis media. The fourth case, one of phthisis, had definite tuberculosis of the middle ear. The writer concludes that, as no tubercles could be seen in the tube, the infection must be hematogenous. In the fifth case, one of meningitis, the ears were normal. The sixth case, one of general miliary tuberculosis, showed an acute streptococcal otitis media.

The author points out that not all the otites in severe tuberculosis of children are tubercular, but are as often due to septic organisms as in any other weakening disease. Tuberculosis of the ear does not always spread through the tube, but may come directly through the bone. Hematogenous infection with resulting foci in the bone is a possibility not to be overlooked.

J. K. Milne Dickie.

Violent Lesion of the Ear with Fracture of the Petrous and Paralysis of the Facial Nerve; Operation; Rapid Recovery of Function of the Nerve Resulting from Decompression.—B. Agazzi. "Boll. del Prof. Grazi," fasc. 11, Anno xxxvi, 1918.

The rapid recovery of the facial nerve in this case is attributed by Agazzi to the early operation and avoidance of sepsis.

A soldier was hit on the right side of head by stone from mine explosion on February 9, 1917. He remembered being hit, but nothing during next three days. Admitted to hospital February 10, with large bruise of right temporo-parietal region and hæmorrhage from right ear, which continued till February 12, when he regained consciousness. Complained of pain in right side of head, deafness, and noises in the right ear, vertigo, dryness of mouth and watering of right eye. Face drawn to left. No rise of temperature. Was transferred to oto-laryngological department February 18. Examination showed typical complete paralysis of right facial nerve. Bruising over right mastoid, which was also tender on pressure. External meatus full of blood-clot. After removal there was lowering of inner end of roof of osseous meatus. Fracture felt. Incus found lying in meatus. Upper part of membrane ruptured. Functional examination gave Schwabach diminished, Rinne absolute negative right. Whisper heard close to right ear. Tuning-fork tests almost normal on left side, slight shortening of bone-conduction, especially with highest tones. Spontaneous nystagmus to left on extreme deviation. Nystagmus diminished by caloric test. Loss of taste for sweetness over anterior two-thirds of tongue on right side.

From the examination it was thought that the lesion was probably in the tympanic part of the facial nerve. Faradic stimulation of facial nerves twelve days after showed equal excitability of both sides. This pointed to compression of the nerve rather than division.

Operation thirteen days after injury. Mastoid cells full of clot. A fissure found in posterior wall of meatus. Small quadrilateral piece of bone came away from just below the bend of the nerve, which was seen to be covered with blood-clot. Clot and bony *debris* removed from middle ear. Körner flap. Meatus drained. Posterior wound closed.

On same day patient could partly close right eye. Nine days later could shut right eye almost completely. Face muscles contract slightly.

In just over three weeks the paralysis had gone completely, but the patient remained totally deaf on right side. Right vestibular function normal at end of two months.

The paralysis in this case was evidently due to pressure of the small loose piece of bone on the nerve.

J. K. Milne Dickie.

Cured Otitic Meningites (Sixteen Personal Observations).—H. Aboulker.

“Rev. de Laryngol.” Nos. 9 and 10, 1919.

In this interesting if somewhat long communication the writer makes the following distinctions in the various types of meningitis:

(1) Septic purulent meningitis, *i.e.* with cloudy fluid containing organisms.

(2) Aseptic purulent meningitis with cloudy fluid, but no organisms.

(3) Serous aseptic meningitis with clear fluid and no organisms.

(4) Serous septic meningitis with clear fluid containing organisms.

He further subdivides aseptic meningitis into diffuse and hypertensive forms.

The diffuse aseptic form is characterised by excess of clear cerebrospinal fluid, albumen in excess, diminution of glucose, and leucocytes in excess. The hypertensive form is characterised by excess of normal cerebrospinal fluid, and gives the signs of increased intracranial pressure. It may be localised in the subarachnoid or in the ventricles. The hypertensive form is always cured by simple removal of the septic focus in the mastoid, etc.

It is frequently very difficult to distinguish between cerebral abscess and hypertensive aseptic meningitis. Abscess develops slowly and silently, while meningitis on the contrary has "*une évolution bruyante, brutale, rapide*." The symptoms are much more evident in the case of meningitis than in the case of abscess. When in doubt one must think of abscess. Lumbar puncture will not help much, as in both cases there is clear fluid under tension. The meninges and brain must be explored, and here the writer emphasises the importance of exploring, not through the septic mastoid cavity, but through a separate clean operation wound in the middle or posterior fossa. This method is almost free from the risk of introducing septic organisms into the brain or meninges.

Of the writer's sixteen cases only three were septic meningitis. Of the remaining thirteen aseptic cases five were diffuse and eight hypertensive meningitis.

J. K. Milne Dickie.

Plastic Surgical Treatment of Stenoses and Cicatricial Atresia of the Auditory Meatus.—C. Caldera. "*Arch. Ital. di Otol.*," xxx, 1, January, 1919.

The writer has had to deal with a number of deep ulcerations and stenoses of the meatus. The healing of those ulcers is very slow, lasting usually two to three months, and there is a considerable tendency to stenosis afterwards.

The method referred to is one where a flap is cut from the tissues immediately in front of the tragus. The attachment of the flap is just below the tragus, and the incisions extend upwards $2\frac{1}{2}$ cm. The vascular supply and vitality of such flap is very good. Some subcutaneous tissue is taken along with the skin. If one is dealing with an ulcer of the meatus, one simply cures away the granulations and applies the flap to the part. If, on the other hand, one is dealing with an old cicatricial stenosis, one must first dilate the stricture, cut out a segment of the skin and scar-tissue, and then apply the flap as in the other type of case. The raw area left in front of the ear is stitched up. The meatus is lightly packed with vaseline gauze and the packing is left for forty-eight hours. In a few days healing is complete and there is very little tendency for the meatus to contract.

The operation can be done under local anaesthesia.

J. K. Milne Dickie.

Plastic Operation for Stenosis of External Auditory Meatus.—P. Caliceti. "*Arch. Ital. di Otol.*," xxx, 1, January, 1919.

Cases of ulceration or stenosis of the meatus were very common in the Italian Army, partly from wounds and partly from application of caustics with a view to malingering.

The method of the writer is to make a retro-auricular incision and free the posterior wall of the meatus completely. An incision is then made along the posterior wall of the meatus after forcible dilatation of the canal. Two vertical incisions are made at the outer end of this incision. Two small triangular flaps are thus cut, and after removal of the cicatricial tissue causing the stricture, these flaps are stitched to the edge of the retro-auricular wound. There is left a large raw area on the posterior wall.

The meatus is treated by tamponage and dilatation and heals in about a month.

J. K. Milne Dickie.

BRONCHI AND ŒSOPHAGUS.

A Manikin for Practice of Bronchoscopy and Œsophagoscopy.—Thomas Hubbard. "The Laryngoscope," November, 1918, p. 851.

Hubbard describes a manikin constructed on approximate anatomical lines and relations, designed for the use of tubes and for the "trying out" of instruments in the supine posture. He also shows shield hooks designed to aid in releasing impacted foreign bodies in the œsophagus.

J. S. Fraser.

Denture in Trachea.—J. Rozier. "Revue de Laryngologie," April 30, 1919.

Soldier, wounded June 11, 1918. Operation. After recovering from chloroform missed his denture. On June 13, 1918, had slight trouble in swallowing. A few days later was a little short of breath. Chest examined. Some *râles* heard. Patient had been gassed, and had some hoarseness in consequence. This improved a little with inhalations. Patient was fairly well for next two months except for some shortness of breath on exertion and severe coughing attacks at night. Larynx examined and diagnosed acute laryngitis. On October 8, 1918, larynx again examined, and foreign body seen in trachea. Patient sent to 18th Oto-Laryngological Centre for removal.

Removed by direct method. Denture was fixed to the anterior wall of trachea by means of a small hook, which was embedded in the wall.

The case was interesting from the lack of symptoms and the small amount of local reaction.

J. K. Milne Dickie.

Digestion of the Œsophagus as a Cause of Post-operative Hæmatemesis.

—J. Hogarth Pringle and J. H. Teacher. "Brit. Journ. of Surg.," vol. vi, No. 24, April, 1919.

Post-operative hæmatemesis usually sets in very early after the operation. The authors have had eighteen clinical cases, most of them occurring in abdominal conditions, but in this paper operations on the stomach are excluded. In one case the vomiting occurred before operation. The amount of blood vomited at one time is, as a rule, small. The vomit is very acid and scalds the throat. A series of fifteen cases seen in the *post-mortem* room showed numerous submucous hæmorrhages, with here and there erosions of the mucous membrane over them. The condition may vary from superficial erosions to complete perforation of the œsophagus. One case showed a fibrinous exudate on the pleura, covering the side of the œsophagus. That the condition occurs during life, and is not simply a *post-mortem* change, is shown by the presence of the submucous hæmorrhages. One patient also complained of retrosternal pain before death. In eleven out of the fifteen cases hæmatemesis had occurred. In six of the cases no operation had been performed, but all were cases of illness of a very severe infective or toxic nature. There was little or no digestion of the stomach in any of the cases. Probably the condition is set up by the escape of gastric juice into the œsophagus during a severe toxic illness, from which it cannot be expelled. The lower part of the œsophagus is more liable to be affected than the upper part. The authors' conclusions are:

"That digestion of the œsophagus may occur during life, and that as a result blood may be vomited.

"That this digestion may take place in any disease in which great lowering of vitality occurs.

"That *ante-mortem* digestion of the œsophagus is one cause of post-operative hæmatemesis."

J. K. Milne Dickie.

TRACHEA AND BRONCHI.

Tooth impacted in a Secondary Bronchus of the Left Lung; Removal by Tracheotomy and Lower Bronchoscopy after Two Unsuccessful Attempts by Upper Bronchoscopy.—Sir StClair Thomson. "Proceedings of the Royal Society of Medicine," July, 1918 (Section of Odontology), p. 100.

The case was that of a healthy girl, aged ten. Four weeks after the operation for extraction of teeth it was suspected, from physical signs in the chest, that there might be a foreign body in the lung.

There was found to be present, a month after the visit to the dentist, a slight wheezing which was audible at a distance of a foot or two from the chest. Rhonchi were heard on both sides, but chiefly over the left lung, with absence of air-entry towards the posterior border of the left axilla. There was a short cough.

An X-ray examination showed the tooth in the depths of the left lung.

On December 28, 1917, an attempt was made under chloroform anæsthesia to remove the foreign body by direct bronchoscopy. The tooth was seen tightly impacted in an externo-lateral, secondary branch of the left bronchus, at a depth of $10\frac{1}{2}$ in. from the teeth, but all efforts to grasp it with various instruments failed.

After an hour and forty-five minutes the operation was abandoned. Eight days later chloroform was again given. Great difficulty was experienced in keeping the tooth well in view in the centre of the field of vision, and strong traction to the right had to be maintained on the handle of the instrument to direct its beak towards the left axilla. This caused the patient to collapse suddenly and artificial respiration was required to restore her. She had been under the anæsthetic for forty minutes.

Later an X-ray showed the tooth as before, or even deeper, with commencing opacity in the left lung. Abscess formation had evidently taken place and action could not be delayed.

On January 26, 1918, chloroform was again administered. Tracheotomy was then performed. Through the tracheotomy wound the operator was able to pass an outer 9 mm. Brünings' tube. The tube passed readily down on to the tooth at a distance of less than $5\frac{1}{2}$ in. A pair of Killian's "bean forceps" was passed down to the tooth and was dilated to free the tooth and to get a good grasp. Following this procedure there was a gush of yellow fluid. The forceps was carefully closed and withdrawn with the tooth firmly grasped in it.

One or two drachms of yellow pus welled up into the left bronchus and were cautiously removed by sponging, with the head and thorax in the Trendelenburg position.

From the beginning of the tracheotomy to the removal of the tooth the time occupied was exactly twenty-nine minutes. There was no shock or collapse. The after-history was uneventful and recovery complete.

Archer Ryland.

MISCELLANEOUS.

Syphilis in the Blacks of Africa.—J. N. Roy. "Rev. de Laryngol.," No. 11, 1919.

The writer concludes on various grounds that syphilis was primarily introduced into Africa from Asia. Northern African races have a milder form than the Central and South African races. The later syphilised races suffer from a much more severe type, with frequent destruction of the palate and nasal septum.

J. K. Milne Dickie.

A Case of Syndrome of the Foramen Lacerum Posterius.—C. Bruzzone. "Arch. Ital. di Laringol.," Anno xxxviii, fasc. 3-4, 1919.

Soldier, aged forty-one, called to arms August, 1915. Was transferred to a supply company after he had been found unfit for service with Alpini. Since enlistment had lost 20 kgrm. in weight. Five years previously had difficulty in swallowing, especially of solids, after an attack of pneumonia; had also regurgitation through the nose at first. When seen swallowing had improved. Two months after onset of symptoms the voice changed and became hoarse. Patient had had periods of improvement. No cough. Examination: Appearance of emaciation. Face symmetrical, left side being smaller than right. Some interstitial keratitis, eyes otherwise normal. The left side of palate a little lower than the right side. On phonation the whole palate was pulled to the right. The left half of the posterior pharyngeal wall was seen to move like a curtain towards the right on phonation. The left half of pharynx hypoaesthetic. The left vocal cord in cadaveric position. Hypoaesthesia of vestibule of larynx. Pulse varied in frequency. Sterno-mastoid and trapezius muscles perfectly normal. No enlarged glands in the neck. No lesions of any other cranial nerves. Wassermann reaction negative. Nothing to note in rest of body.

From the study of the writings of Vernet, Lermoyez and others, the writer concludes that the tenth cranial nerve is purely sensory and that all the motor fibres are derived from the eleventh nerve. The innervation of the palate is most probably also from the eleventh through the pharyngeal branch of the vagus. The actual lesion in the foramen lacerum posterius was most probably a rickety exostosis or periostitis.

J. K. Milne Dickie.

Syndrome of Posterior Cranial Nerves.—G. Bilancioni. "Arch. Ital. di Laringol.," Anno xxxviii, fasc. 3-4, 1919.

The writer gives details of eight cases of wounds of the posterior cranial nerves of varying degree. One of these was an isolated lesion of the left superior sympathetic ganglion with characteristic symptoms, namely contraction of the left pupil, left palpebral fissure smaller than right, left eye more sunken than right (enophthalmos), hyperaemia of left conjunctiva, dilatation of vessels of left cheek, left side of forehead, and left side of pharynx.

J. K. Milne Dickie.

Syndrome of Foramen Lacerum Posterius.—Vernet. "Revue de Laryngologie," April 15, 1919.

Writer reports a case of paralysis of the right sixth, seventh, ninth, tenth and eleventh cranial nerves following injury to head as a result of being buried by a shell. The right ear and nose bled immediately after the injury.

J. K. Milne Dickie.

LISTS OF ORIGINAL PAPERS.

Arch. Ital. di Otol., vol. xxviii, Fasc. 3, 1917. (Abstracted by J. K. MILNE DICKIE.)

AGAZZI, B.—“A Case of Otitis caused by Instillation of Nitric Acid.”

British Medical Journal, August 9, 1919. (Abstracted by DOUGLAS GUTHRIE.)

MACKAY, LEONARD.—“The Bacteriology of Chronic Nasal Catarrh and its Treatment by Autogenous Vaccines,” p. 159.

Johns Hopkins Hospital Reports, vol. xviii, 1919. (Abstracted by J. K. MILNE DICKIE.)

BOGGS, T. R., and M. C. WINTERITZ.—“Acute Suppurative Hypophysitis as a Complication of Purulent Sphenoidal Sinusitis.”

Lancet, vol. i, 1919, p. 977. (Abstracted by MACLEOD YEARSLEY.)

LAKE, R.—“A New Method of Incision of the Tympanic Membrane for Acute Otitis.”

Vol. ii, 1919, p. 59.

JONES, J. ARNOLD.—“A Case of Septic Meningitis of Otitic Origin: Complete Recovery.”

Medical Journal of Australia, May 31, 1919. (Abstracted by A. J. BRADY.)

EDWARDS, J. G., and W. A. EDWARDS.—“Dental Brooch in the Throat.”

June 7, 1919.

MARSH, H. SEWARD.—“Three Cases of Interest in Rhinology: (1) Asthma due to Chronic Antral Suppuration; (2) Tooth in Antrum of Highmore; (3) A Case of Vacuum Frontal Headache.”

New Orleans Medical and Surgical Journal, June and July. (Abstracted by J. A. KNOWLES RENSHAW.)

GRAY, C. P.—“The Significance of Tonsillitis in the Child.”

Proc. Roy. Soc. Med., June, 1919, Section of Anæsthetics. (Abstracted by ARCHER RYLAND.)

BOYLE, H. E. G.—“Case of Laryngo-Fissure with Removal of Intra-Laryngeal Growth Performed under Gas and Oxygen,” p. 20.

SHIPWAY, F. E.—“Case of Tonsillectomy in a Man Weighing 23 st.,” p. 18.

Section of Ophthalmology.

LANG, WILLIAM, and DONALD ARMOUR.—“Ivory Exostosis, Growing from the Roof of the Frontal Sinus into the Orbital and Cranial Cavities. Removed through an Osteo-plastic Opening in the Cranium,” p. 16.

Revue de Laryngologie, No. 12, June 30, 1919. (Abstracted by J. K. MILNE DICKIE.)

CHEVAL, V.—“Physiologie de la VIII^e paire; audition et équilibre.”

BRINDEL, A.—“Deux cas de fistules labyrinthiques, l'une chez une ancienne épidée, l'autre au cours d'une otorrhée ancienne: opération: guérison.”

MAUPETIT, R.—“Sur un cas de paralysie récurrentielle bilatérale.”

Revue de Laryngologie, d'Otologie, et de Rhinologie, July 15, 1919. (Abstracted by H. LAWSON WHALE.)

VINCENT.—“Poisoning by the New Gases from the Standpoint of Oto-Rhino-Laryngology.”

FIOCRE.—“Posterior Mastoiditis, with Sub-Occipital Abscess and Nervous Syndrome (Foramen Lacerum Posterius).”

Abstracts of the Annual French Congress of Oto-Rhino-Laryngology.

The Laryngoscope. April, 1919, vol. xxix, No. 4. (Abstracted by J. S. FRASER.)

Yearly Index and Digest of Oto-Laryngology.

May, 1919, vol. xxix, No. 5.

VAIL, D. T. (Cincinnati).—"Types of Orbital Abscess and Exophthalmos due to the Intra-nasal and Suppurative Processes." p. 263.

EAGLETON, W. P. (Newark).—"The Reconstruction of the Mastoid Wound Cavity by the use of Bone Grafts and Chips." p. 272.

KERNAN, J. D., JR. (New York City).—"A Case of Tuberculosis of the Sphenoid." p. 276.

LAFORCE, B. D. (Ottumwa).—"Technic of Tonsillectomy with the LaForce Hemostat Tonsillectomes, Models A and B." p. 280.

GATEWOOD, LAWRENCE (New York City).—"A Simple, Safe and Rapid Tonsil Enucleation Technic for Local or General Anæsthesia." p. 283.

LAMOTTE, W. O. (Wilmington, Del.).—"Report of Styloid Processes Appearing in the Throat with Symptoms." p. 288.

MYERS, E. L. (St. Louis).—"A Modification of the Beck-Sluder Tonsillectome." p. 290.

CULP, J. F. (Harrisburg, Pa.).—"Two Unusual Cases of Foreign Body Lodged in the Upper Respiratory Tract." p. 292.

WRIGHT, JONATHAN (New York).—"Modern Commentaries of Hippocrates: The Physiology and Pathology of the Nose and Throat." p. 295.

ACUSTICUS TUMOURS.

REVIEW.

Tumours of the Nervus Acusticus and the Syndrome of the Cerebello-pontile Angle. By HARVEY CUSHING, M.D. W. B. Saunders Co., 1917.

IN this very complete and elaborately worked-out monograph Prof. Cushing presents his surgical experience of a series of thirty verified cases of acoustic neuromata.

No attempt is made by the author to include the various tumours of the cerebello-pontine angle. The acoustic neuromata are alone dealt with, and other tumours of the recess, except under the question of differential diagnosis, are excluded. The monograph is therefore a highly particular inquiry within a single field of surgery. It is a special study of a special tumour in a special locality.

In this journal it is neither possible nor desirable to present more than an outline. The reader of the monograph itself will at once realise how much is lost to a skeleton statement such as the present one by the necessary omission of the excellent photographs with which the original work is amply supplied.

The author's plan has been, first of all, to report in full upon those cases which he has submitted to operation, thirty in number, and to supply a full comment upon each. The remainder of the book is devoted to a full consideration of these lesions from all points of view that lie between ætiology and surgical treatment.

Ætiology and Incidence.—According to Henneberg and Koch there is very often an antecedent history either of injury or of otitis media, and Hessler is said to have assembled nineteen examples of acoustic tumour in patients who had suffered from ear disease.

Acoustic tumours apparently arise from embryonic tissue-rests in the peripheral end of the nerve, and the growths may possibly be influenced

by such elements as trauma, local infection or pregnancy. Judging from the present series, they appear to be somewhat more common in women and more often on the left side. The average age of onset has been thirty-four years; hospital admission and operation on the average date four years later.

Symptomatology.—The chronology of symptoms makes it clear that the clinical diagnosis of an acoustic tumour can be made with reasonable assurance *only* when auditory manifestations definitely precede the evidences of involvement of other structures in the cerebello-pontine angle. By the time these patients present themselves at a neurological clinic it is rare for the eighth nerve to be the only one affected. So important, however, is the involvement of the eighth nerve, that those initial symptoms referable to the acusticus must first receive consideration, and other symptoms referable to other important structures may be taken later in the order in which they occur.

Auditory and Vestibular Symptoms.—In twenty-five of the thirty cases the inaugural symptoms were auditory and not vestibular. Tinnitus usually preceded the onset of deafness. Occasionally tinnitus has persisted even when there appeared to be complete loss of hearing by air-conduction. Absolute deafness is almost as difficult to certify as an absolute loss of the vestibular reactions in these cases.

The majority of the patients in this series, by the time of their admission, appeared to have a complete acoustic paralysis. It is of interest to note in this connection that a considerable number of the patients who were completely deaf before, regained some hearing after operation. It has been the author's experience that a return of function in the vestibular nerve is less likely to occur, although in one case of the series it actually did do so. These facts seem to prove that intact fibres may still traverse these tumours.

There is no reason to suppose that the cochlear division will be the first division of the eighth to become involved; symptoms on the part of the vestibular mechanism often appear before any impairment of hearing. It was Henschen's view that the vestibular branch is more apt to be the primary seat of the lesion.

Prof. Cushing emphasises in this connection the extreme difficulty of determining whether the forms of nystagmus, vertigo and ataxia which the patient exhibits are to be ascribed to labyrinthine or to cerebellar involvement. The subject is still greatly tangled. "In its clinical adaptation," he states, "we must rely at present on the single fact that in most of these cases the nystagmus in a horizontal direction presents excursions which are wider, slower, and more pronounced on looking toward the side of the lesion than toward the other. This is the case, regardless of whether the vestibular apparatus is still capable of responding to caloric tests."

The outstanding results of the caloric test in these cases have been a lowering of vestibular irritability. But this finding has not been invariable, and fair reactions have been obtained in three or four cases. Even in the case of large tumours the conducting path is not therefore necessarily destroyed.

Suboccipital Symptoms.—There is generally paroxysmal pain, more often on the side of the lesion, while some soreness or stiffness in the neck is apt to be present, especially on stooping or straining.

Cerebellar Symptoms.—Signs of cerebellar inco-ordination appear in the average case within a year or so after the first onset of acoustic symptoms.

Unsteadiness of gait is usually the first to be noted. There is a distinct tendency to fall to the side of the lesion, and in progression to deviate toward the same side.

Adjacent Cranial Nerve Symptoms.—Unlike the auditory phenomena, the symptomatic disturbances which may arise from other cranial nerves tend to fluctuate in their intensity: and not only this, for misleading symptoms may arise from irritation or from paralysis of contra-lateral cranial nerves. In explanation of this latter condition none of the advanced hypotheses are entirely satisfactory.

Trigeminal Nerve.—Next to the acoustic this is probably the first cranial nerve of whose involvement the patient is subjectively conscious. The most delicate objective evidence of a trigeminal involvement is unquestionably the lowering of, or the loss of, the corneal reflex on the affected side. Neuralgic pain is relatively uncommon.

Abducens Nerve.—Twenty of the thirty patients gave a history of double vision, sometimes fugitive, sometimes persistent, and in eleven of the twenty an objective weakness of the abducens on the side of the tumour was present on admission.

In view of the fact that the sixth nerve lies so near the middle line it seems improbable that the abducens is ever directly pressed upon by the tumour. Strangulation of the nerve by an overlying vessel is the more probable explanation.

Facial Nerve.—In nineteen out of the thirty patients some degree of facial weakness was present at the time of admission. It is of interest to note that the nerve may be elongated in its course to an amazing degree without producing any palsy whatsoever.

The Glosso-pharyngeal, Vagus, Accessory and Hypoglossal Nerves.—Both motor and sensory nerves adapt themselves with extraordinary readiness to such a gradual elongation and distortion as an acoustic tumour may produce. This seems to occur with exceptional readiness in regard to the four nerves in question. The author confesses to some doubt as to whether an impairment of function may reach such a stage as to be often demonstrable.

Dysarthria and dysphagia are commonly observed, but it is by no means clear how far these symptoms should be regarded as evidences of glosso-pharyngeal involvement.

In this series a routine laryngoscopy has not been made, and hence nothing can be said with regard to vocal cord paralysis.

In brief, the ninth, tenth, eleventh and twelfth nerves do not seem to play an important symptomatic rôle in these acoustic tumours, although some authors have regarded these nerves as being essentially involved in those symptoms, if present, which are related to the acts of swallowing and phonation, namely, dysarthria and dysphagia.

Whatever may be their cause, dysphagia and dysarthria probably occur before the end in every case of cerebello-pontine tumour. One or both of these symptoms were recorded in twenty-one of the thirty cases.

General Pressure Symptoms.—The most common of these are headache, choked disc, vomiting, a blunting or loss of the sense of smell, and psychic disturbances.

Among the general pressure symptoms are included occasional cerebellar seizures—the so-called cerebellar crises. The characteristic suboccipital discomfort in the early stage has already been mentioned. In a certain proportion of cases this may progress and lead to paroxysms of a most extreme and agonising type, with retraction of the neck and back, respiratory difficulties, an altered pulse, and often a loss of consciousness.

Cerebellar seizures were observed in seven patients in the present series. The author states his belief that they are due to the periods of variable tension of the cerebro-spinal fluid retained in the arachnoid cisternæ. As to the sensory and motor paths, the deep reflexes, with but few exceptions, were active to exaggeration, possibly due to the hydrocephalus, in all of the thirty cases on admission.

The author's summary is concise. From the above group analyses of the individual symptoms, as well as from the story connected with the case-histories, it can be gathered that the symptomatic progress of the average acoustic tumour occurs more or less in the following stages: First, the auditory and vestibular manifestations; secondly, the occipitofrontal pains with suboccipital discomforts; thirdly, the inco-ordination and instability of cerebellar origin; fourthly, the evidences of involvement of adjacent cerebral nerves; fifthly, the indications of an increase in intracranial tension with a choked disc and its consequences; sixthly, dysarthria, dysphagus; and finally, cerebellar crises and respiratory difficulties.

Pathological Anatomy.—Small tumours appear to have their origin in the distal part of the nerve. The view has been advanced by Henschen that acoustic tumours originate in most, if not in all, instances in the peripheral portion of the nerve, and possibly, indeed, within the auditory canal. Certainly all examples of early tumours which have been chance *post-mortem* findings have been so situated. Acoustic tumours of a size sufficient to elicit a more or less typical cerebello-pontine angle syndrome have a characteristic external appearance. Those of moderate size are more or less oval in shape, and as they undergo a further enlargement they conform to the resistant pyramidal bone on the one side, to the base of the posterior fossa below and the tentorium above, whereas on their free side they crowd away from the so-called angle of the relatively unresisting cerebellum, the brain stem and the cerebral nerves.

There is one matter of significance in connection with the possible seat of origin of these tumours, namely, the almost invariable presence of a defect on the surface of the tumour, corresponding with the situation of the porus.

As to the relation of the tumour to the meninges, it should be remembered that the former is not only subdural and extra-cerebellar, but that it lies within an arachnoid capsule. The author thinks it quite probable that a large number of operations have stopped short of the tumour exposure after the mere evacuation of the encysted fluid enveloping the growth.

The most striking feature in the pathological anatomy of the tumour in its relation to cranial nerves is the sometimes enormous distortion and elongation suffered by the latter. The greatest distortion, when the tumour has attained any considerable size, affects the fifth and the seventh nerves. In their normal intracranial course they are about a centimetre and a half in length, but they may be elongated to 5 cm. or more without appreciably affecting their function. Distortion of the pons cerebellum and medulla also occurs, but needs no lengthy comment. Choked disc and cerebral herniations are among the distant effects produced by the tumour.

Stated briefly, the gross intracranial changes which an acoustic tumour is capable of producing are of three kinds—those relating to the common seat of its origin in the meatus, those relating to the nervous structures in the cerebello-pontine angle, and those which are distant and produced by internal hydrocephalus.

The many excellent photographic reproductions of the microscopical appearances of the tumour on section give a clearness of notion which it would be mere waste of time to try to laboriously render in long verbal descriptions. Readers are strongly advised to refer to the monograph itself for the excellence of the illustrations throughout.

These tumours are definite and unique in their tissue characteristics. The typical structure may be summarised as follows: A combination of fibrous zones in which the nuclei tend to dispose themselves in palisades or whorls, together with a loose reticular tissue containing glia-like fibrils in which fat and hyaline metamorphosis commonly occurs. There can be no question but that the lesion is a true nerve tumour.

The eighth chapter is devoted to the consideration of multiple tumours and of tumours not strictly acoustic, but probably of an allied nature. These are bilateral acoustic tumours, generalised neurofibromatosis and the meningeal endotheliomata.

Prof. Cushing summarises the subject as follows: Acoustic tumours, as a rule, occur as isolated unilateral growths. Unsuspected bilateral tumours, however, have been occasionally disclosed at operation or autopsy. These tumours, moreover, whether single or bilateral, may in rare instances be an expression of generalised neurofibromatosis, and the histological character of the lesion is the same whether they occur as isolated lesions or in company with the more wide-spread disorder. Furthermore, multiple endotheliomata of the meninges may accompany bilateral acoustic tumours. Doubtless these lesions are all remotely correlated and are attributable to the same or a similar developmental anomaly.

The isolated acoustic tumours are far more common than the bilateral ones and far more easily recognised. Nevertheless, even in the absence of the tell-tale Von Recklinghausen syndrome, it should become possible to determine from the clinical symptoms, aided by the X ray, the presence of a bilateral lesion, even though misleading bilateral symptoms may be provoked by a single tumour.

Diagnosis.—The author gives a list of various diseases and conditions which have actually been diagnosed in cases of cerebello-pontine tumour. The most common are: (1) Meningitis serosa circumscripta lateralis; (2) Menière's disease; (3) basilar meningitis, tuberculous or syphilitic; (4) a gastric disorder, ulcer or carcinoma.

Chronic serous arachnoiditis simulating a tumour is a local expression of the condition called meningitis serosa circumscripta, and it is above all other conditions the one most likely to cause diagnostic confusion either before or, indeed, at the time of operation. It is the most common source of what is known as a "pseudo tumour cerebelli," for symptoms typical of an intracranial tumour may be produced thereby. There is a close symptomatic resemblance between these local accumulations of fluid in the lateral cistern and a true cerebello-pontine tumour. This is especially the case when, as so often happens, the chronic local arachnoiditis is a sequel of an otitis media which has left the ear so damaged as to impair auditory impulses and thus simulate the effects of an acoustic neuroma.

Radiographic Changes in the Porus.—The author is in doubt as to how much importance should be attached to this sign. At the present time the chief danger lies in misinterpretation of the skiagrams. It has not as yet attained the same level of value as the corresponding sign in pituitary disease. The monograph itself must be consulted for the excellent reproductions of X-ray photographs which illustrate this part,

and also for the diagrams which are given to demonstrate the best positions of the head for radioscopy purposes.

The Bárány Reactions.—The more elaborate Bárány tests for labyrinthine function have not proved, in the author's experience, much more than confirmatory evidence of what may be determined without them. The main thing to determine in the case of an acoustic tumour is whether the vestibular as well as the cochlear branch of the nerve is only partly or is completely thrown out of function. As regards the vestibular function, Bárány's caloric tests give the most accurate information through their liberation of vertigo and nystagmus.

The response of the caloric test in the case of a true tumour of the eighth nerve is very characteristic, and is in the direction of a much-reduced excitability of the vestibular division of the nerve.

Summary.—In the absence of a clinical history of primary involvement of the acusticus but with definite cerebello-pontine angle symptoms, the diagnosis of an acoustic tumour is probable if characteristic vestibular responses to caloric tests are abolished, if deafness is complete when the contra-lateral ear is irrigated, and if the porus shows a radioscopy enlargement. Moreover, recess tumours which originate from another source than the acusticus are apt to show some symptom which from the point of view of the typical acoustic tumour syndrome is incongruous.

The final chapter is devoted to giving in some detail the technical steps of the type of suboccipital exploration for tumours of the posterior fossa which is favoured in his clinic.

The operation is referred to as the bilateral cerebellar exposure through a cross-bow incision in the occipital region. It is advocated for all subtentorial growths whether or not they occupy the cerebello-pontine angle.

For the detailed steps of the preferential operative procedure preferred by Prof. Cushing we refer the reader to the monograph.

Briefly, they consist in the wide bilateral exposure of the posterior surface of the cerebellum, combined with the early evacuation of cerebro-spinal fluid, which serves to promptly relieve the intra-cranial tension, which in turn permits of sufficient dislocation of the hemisphere to expose the recess without endangering the medullary centres or damaging the adjacent cerebellar lobe.

Among the imperfections of the operation must be remembered its magnitude, the length of time required for its performance, and the fact that only a partial intracapsular enucleation can be advocated at the present time, and not an attempt at complete extirpation.

An essential fact with regard to statistical results is that the case-mortality has been 20·7 per cent.; the operative mortality based on the number of suboccipital operations, 39 in all, has been 15·4 per cent.

The great importance of this subject renders Prof. Cushing's monograph indispensable to all otologists. It is a worthy companion to the same author's work on "Pituitary Tumours" reviewed at length in this journal some years ago.

Archer Ryland.

CORRESPONDENCE.

To the Editor of THE JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY.

SIR,—With regard to the book of Sir Th. Wrightson, "An Enquiry into the Analytical Mechanism of the Internal Ear," recently reviewed in this Journal, allow me to express the following important considerations:

In the first place it is to be noted that Wrightson proposes a new theory, because he thinks that the theory of resonance cannot be sustained because of the supposed impossibility of vibration by resonance of the fibres of the *tectorial* or *basilar* membranes because immersed in a liquid. Now I have demonstrated that this objection is of no value, because the model of the basilar membrane constructed by me vibrates in water as in air, and precisely by resonance.

Since the theory of resonance explains all the known facts, there would not be any reason to substitute another for it, unless the new theory should be more simple and more clearly demonstrated to be true. Let us see if the theory of Wrightson satisfies us in these respects.

Above all, he holds that for all sounds, whether simple or compound, all the organs of Corti vibrate. How is it possible to reconcile with this theory the gaps which can exist in pathological cases, exactly circumscribed to certain regions of the tone scale? Here is the same defect that is found in Ewald's theory.

Entering now into the particulars of the new hypothesis, we see that Wrightson holds that the cochlear liquid vibrates as an incompressible whole, and reproducing exactly the vibrations of the stapes (while also the liquids are compressible, and it is through this that the sounds are propagated in it).

He maintains that there is a stimulus corresponding with each crest, hollow and node of the acoustic wave (simple or compound), and that the brain recognises the sounds by the number of stimuli which it receives per second through the rubbing of the acoustic hairs against the *tectoria*. By means of diagrams (some of which are not exact, as he himself recognises) he shows that in the wave resulting from the fusion of two or more sinusoidal waves, one can identify the stimuli with the component periods of the single wave. Then he says that all the nerve-fibres of the whole cochlea are stimulated in such a way that the brain can find in the complex vibrations the elementary periods of the wave, and hence can thus make the analysis of the sounds without having need of the 15,000 resonators of Helmholtz.

First of all it is to be observed that in order to find in the resulting wave all the periods of those components, Wrightson looks for them in a mode quite arbitrary, making occur an identical stimulus for different notes. This does not seem right. Besides, the facts which are suitable to the theory of Wrightson result—and not always exactly—from the curves which he has drawn in the hypothesis that the amplitudes of the elementary waves are all equal. If, on the contrary, the amplitudes are different, all that is no longer true.

The main basis of the hypothesis is then lacking, according to which the analysis of the sounds would be made. Also the author alludes to the fact that in changing the amplitudes and the phases of the component sounds the resulting wave changes in form, but says (p. 34) that in the greater number of cases drawn by him these characteristics recur. For the validity of a theory it is not enough, however, that it should be true in the greater number of cases; it must be always true.

But, granted that in the resulting wave one finds the periods of all the component sounds, this would serve very well to sustain the theory of resonance. With this difference, however, that if all the nervous elements of the whole cochlea should vibrate together exactly in the same way (except for the amplitude) for all sounds, would it be necessary that they should be distributed along the basilar membrane and have different dimensions in the different positions of the basilar

membrane? It would have been more simple to abolish the cochlea and place in front of the oval window that number of nerve-cells sufficient to receive the acoustic stimuli transmitted by the stapes. If nature, which resorts always to the most simple means, has not used this method, but has chosen a system more complicated, there must be a reason for it. This is easily understood in the theory of resonance, but not in that of Wrightson.

Keith, in support of the theory of Wrightson, cites the analogy with sight, and says that in the eye there are only three sorts of nerves. But these, in the theory of Young, serve to appreciate the colours and are excited also by resonance. But as the brain appreciates the form of an object from that of an image which is formed of it on the retina, and hence from the different positions in space of the nervous elements excited on the retina, thus it judges the height of the sounds from the position in space on the tectorial or basilar membranes of the nervous filaments which are excited, as the theory of resonance demands. If this estimation must be made, as Wrightson supposes, the brain must calculate in a single instance the vibrations of all the acoustic cells. One cannot say whether the brain would be able or not to do this, and if it would be more easy for it to count the vibrations or to recognise the peripheral situation in space of the filament which transmits this stimulus to it. But if analogies are worth anything, visual sensation (form of objects) and tactile sensations support the theory of resonance. Also for touch the brain can judge the peripheral positions of the filaments which send it the stimulus. There would be probably more likelihood in the theory of *Ewald*, namely, that the brain recognises the sound from the form which the basilar membrane assumes—that is, from the form of the so-called *acoustic image*.

The other reasons of anatomical and physiological nature which Keith brings to the support of the new theory do not seem to me convincing, but it would be too long to examine them here separately.

Yours, etc.,

PISA, ITALY:

July 6, 1919.

Prof. A. STEFANINI.

(J. K. MILNE DICKIE (*trans.*),)

OBITUARY.

BARCLAY JOSIAH BARON, Knight.

SIR BARCLAY BARON'S death on June 7, 1919, at 61 years of age, was a wholly unexpected calamity following a slight accident on May 25. He was pulling down a dead branch from a tree in his garden when it broke off, and he fell on to a large stone, fracturing some ribs. Though distressed at the time he was soon relieved by strapping. His temperature rose to 102° F. the following day and the pyrexia continued for a few days, and he himself came to the conclusion he must have contracted influenza. After the pyrexial condition had subsided he had severe pains in his lumbo-sacral region, but he had suffered from similar lumbago attacks on several previous occasions, and therefore this last attack, which persisted up to the day prior to his death, caused no anxiety though grave inconvenience. The next morning at 1 a.m. he woke complaining of headache; at 3 a.m. he sat up in bed, but felt faint and his breathing became laboured and an hour later he died, the immediate cause of death being apparently a hæmorrhage into the spleen.

As a student Barclay Baron left no doubt that he was equipped with intellectual capabilities far above the average, and we believe he was considered the first student of his year at the University of Edinburgh. He chose Bristol for his professional practice, and was elected a physician at the Bristol General Hospital and Lecturer on Pathology at the University College. But these offices he soon relinquished on his appointment as Physician for Diseases of the Throat and Nose—a department which he held for eighteen years, doing a great deal of valuable work until the growing demands of his private practice impelled him to resign his active hospital work and to accept office as Hon. Consulting Physician to the Department which he had founded. Meanwhile he had been President of the British Laryngological, Rhinological and Otological Society, and though too rarely contributing to the literature of our speciality he took an active interest and share in the work of the Society.

We note that he made the following contributions: "The Influence of Certain Habits on the Voice," 1903; "Significance of Hoarseness and Loss of Voice in Certain Cases of Pulmonary Phthisis," *Brist. Med.-Chir. Journ.*, 1888; "Koch's Treatment of Tuberculosis," with Dr. M. Skerritt, *ibid.*; "Case of Paralysis of Right Vocal Cord due to Thoracic Aneurysm," *ibid.*, 1901; "Four Cases of Labyrinthine Disease treated by Pilocarpine," *ibid.*, 1894; "Twenty Years' Experience in Treatment of Diseases of the Throat," *ibid.*, 1901; "Case of Transformation of a Benign into a Malignant Growth after Intra-Laryngeal Operation," with Sir F. Semon, *Internat. Centralb. f. Laryngol.*, 1889.

For several years Barclay Baron's interests had largely centred in work on the Bristol Town Council, and he was elected Lord Mayor of Bristol for two years during the war—an office he filled with most signal success. Gifted with a remarkable fluency of speech, possessed of a great sense of humour, and at all times a bright, cheerful companion, he was particularly happy in his Lord Mayoralty. During such a period of anxiety he encouraged all with whom he was brought into contact, and by his enthusiasm and manly addresses to soldiers and sailors he was able to do very great service to his city and country. Barclay Baron's untimely death was a very great loss to the city of Bristol and to the medical profession.

P. WATSON-WILLIAMS.

NOTES AND QUERIES.

Mr. Musgrave Woodman has been appointed Aural Surgeon and Laryngologist to the General Hospital, Birmingham.

BOOK RECEIVED.

Injuries to the Head and Neck. By H. Lawson White, M.D., F.R.C.S., with Preface by Col. F. F. Burghard, C.B., M.D., M.S., F.R.C.S.
Price 15s. net. London: Baillière, Tindall & Cox.

THE
JOURNAL OF LARYNGOLOGY,
RHINOLOGY, AND OTOTOLOGY.

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**REPORTS FOR THE YEAR 1918 FROM THE EAR AND THROAT
DEPARTMENT OF THE ROYAL INFIRMARY, EDINBURGH.**

Under the care of A. LOGAN TURNER, M.D., F.R.C.S.E., F.R.S.E.

PART I.

THE COMPLICATIONS OF CHRONIC MIDDLE-EAR SUPPU-
RATION. INDICATIONS FOR, TECHNIQUE AND RESULTS
OF, THE RADICAL AND MODIFIED RADICAL MASTOID
OPERATIONS; DETAILS REGARDING THE LABYRIN-
THINE AND INTRACRANIAL COMPLICATIONS OF
CHRONIC MIDDLE-EAR SUPPURATION.

(A Paper Based on an Analysis of 306 Cases of Chronic Middle-ear Suppuration, as follows: Radical Mastoid Operations, 248; Modified Radical Mastoid Operations, 17; Labyrinthitis, 26; Intracranial Complications, 25.)¹

By J. S. FRASER, M.B., F.R.C.S.Ed., and W. T. GARRETSON,
M.D.Iowa, F.R.C.S.Ed.

This paper is a continuation of one written by Capt. Milne Dickie and the operator (J.S.F.),² or rather of the second portion of that paper (B) which deals with chronic middle-ear suppuration and its complications. In the former publications seventy-eight chronic cases were reported, including nine fatal cases (11·5 per cent. mortality). In the present paper 306 cases are dealt with and the fatal cases number sixteen (5·3 per cent. mortality).

The cases now recorded include all those of chronic middle-ear suppuration and its mastoid, labyrinthine and intracranial complications operated on at the Royal Infirmary, Edinburgh, at Leith Hospital, and in private practice between 1911 and 1918—*i.e.* the chronic cases operated upon since the publication of the previous paper. (The only cases not included are (1) five cases at the Royal Infirmary, of which

¹ At a meeting of the Otological Section of the Royal Society of Medicine, held February 21, 1919.

² JOURN. OF LARYNGOL., RHINOL., AND OTOL., 1912, xxvii, pp. 133, 191.

the records have unfortunately been lost: none of these cases ended fatally. A case of temporo-sphenoidal abscess operated on six months before the war by an otologist who joined up at once. On admission the patient was suffering from septic œdema of the brain and meningitis. The abscess was re-opened (J. S. F.) but the patient died soon after admission. A second fatal case not included was one in which the patient suffered from chronic suppurative otitis media (right) with cerebellar symptoms. Autopsy showed that death was due to a cerebellar tumour on this side. (2) Fifteen cases operated upon at the Edinburgh War Hospital, Bangour. These included one recovery from purulent leptomeningitis and one death from metastatic abscess following septic thrombosis of the sigmoid sinus. Total chronic cases not included, 22, with three deaths.)

RADICAL MASTOID OPERATIONS: 238 CASES (10 BILATERAL);
248 OPERATIONS.

Sex.—Of the 238 patients, 118 were males and 120 were females.

Age (in decades).—1 to 9 years, 25; 10 to 19 years, 92; 20 to 29 years, 74; 30 to 39 years, 27; 40 to 49 years, 13; 50 to 59 years, 4; age not given, 3: average age, 20 years.

Residence.—Edinburgh and District, 104; country, 134.

Side of Operation.—Bilateral, 10; right, 106; left, 122; total, 248 operations.

Cause.—The statements of the patients and their relations as to the causation of chronic middle-ear suppuration are as a rule very unsatisfactory. Most of the patients have forgotten the date and origin of the discharge. The most common causes appear to be scarlet fever and measles. Not infrequently the aural discharge is attributed to a blow on the ear, but in many of these cases examination of the other ear reveals a dry perforation or a scar in the drumhead, and it is hard to believe that the school teacher, who is usually blamed, has struck the child first on one ear and then on the other and that chronic middle-ear suppuration has resulted on both sides. In only 66 cases did the patients or their relations remember the cause of the ear trouble, as follows: Measles, 26; scarlet fever, 25; pneumonia, 3; whooping-cough, 1; mumps, 1; smallpox, 1; teething, 2; cold, 1; injury, 6?

As showing the distribution of chronic purulent otitis media and its complications between the wealthier and poorer sections of the population, it may be of interest to state that out of the 306 chronic cases operated on in the last seven years, and dealt with in this paper, *only nine were performed in private practice.*

On inquiry, the acting superintendent of the Royal Infirmary informed us that probably about 80 per cent. of the population of Edinburgh and the south-east of Scotland (from which the Infirmary mainly draws its clientele) would come to charitable institutions such as the Royal Infirmary for operations like the radical mastoid operation. According to this calculation 20 per cent. of the cases instead of 3 per cent. should have been operated on as private patients. It would thus appear that chronic suppurative otitis media is not only absolutely but also relatively more common among the poorer sections of the community than among the more wealthy.

If cases of severe acute suppurative otitis media were properly

treated when they arise—*e.g.* in fever hospitals—there would be very little chronic middle-ear suppuration, and consequently the radical mastoid operation would seldom be called for. Unfortunately Public Health Authorities have so far turned a deaf ear to the remonstrances of otologists in the matter. At the Seventeenth International Congress of Medicine in 1913, the Sections of Laryngology and Otol-ogy unanimously carried the following resolution: "That it would be greatly to the advantage of the community if experts in otology and laryngology were attached to the special hospitals for the treatment of epidemic diseases." The resolution was subsequently handed to Dr. Herringham, the General Secretary, by Mr. Arthur Cheatle and Mr. Sydney Scott, and by him transmitted to the Permanent Committee of the International Congress.

Duration.—According to the statements of the patients, this varied from five months to twenty or thirty years. Here again patients' statements were unreliable—*e.g.* several said that one ear had only been discharging for two or three weeks and denied that the other ear had ever discharged at all, and yet examination showed the results of old suppurative otitis media on the latter side.

Nose.—In 47 cases the condition of the nose was not noted. Of the remaining 191 cases, 63 were normal, 2, showed a dry perforation of the septum, 59 deviation of the septum, 29 acute or chronic nasal catarrh, 28 hypertrophic rhinitis and 6 atrophic rhinitis. One patient had nasal polypi and three suffered from maxillary antrum suppuration. Several of the patients who had deviation of the septum also had nasal catarrh or hypertrophic rhinitis. We have not systematically examined the maxillary antrum and other nasal sinuses in cases of chronic middle-ear suppuration at the time of the radical mastoid operation, but we are surprised to note that Bodkin¹ finds that the antrum is infected in 93 per cent. of cases and that one or both antra are full of pus in 16 per cent.

Pharynx.—In 55 cases the condition of the pharynx was not noted. In the remaining 183 the conditions were as follows: Normal, 87; slight adenoids, 21; enlarged tonsils, 25; enlarged tonsils and adenoids, 47 (24 of these had tonsils and adenoids operated upon before the radical mastoid operation). Three patients showed pharyngitis sicca.

Condition of Meatus and Membrane on Operated Side.—Of the 248 operated ears the condition of the membrane could not be seen in 129 instances on account of the presence of a polypus. In 10 cases the meatus was so full of cholesteatoma and so narrow in nine others that the membrane could not be inspected. One case showed hyperostosis of the meatus with a perforation in the lower part of the drumhead. Of the remaining 99 operated ears, 4 showed anterior perforations, 21 showed central perforations, 10 almost entire absence of the drumheads, 37 posterior perforations and 22 attic perforations. Five cases showed more than one perforation. Eighteen cases showed mastoid swelling or abscess and 3 a sinus over the mastoid, while in 6 cases there was a mastoid fistula. Eight patients had previously had Schwartze operations performed on the same side. Six patients had had radical operations performed once; one patient had had the radical operation performed six times and two others eight times on the same side before coming to the Royal Infirmary.

¹ JOURN. OF LARYNGOL., RHINOL., AND OTOL., 1918, xxxiii, p. 200.

Condition of Meatus and Membrane on Non-operated Side.—Of the 228 unoperated ears the condition of 13 was not noted. Normal, 52; evidence of Eustachian obstruction, 34; acute suppurative otitis media, 2; chronic suppurative otitis media, 36; chronic suppurative otitis media with polypus or granulations, 12; attic perforations with granulations, 2. In 70 cases the membrane showed results of chronic suppurative otitis media; 6 had previously had mastoid operations performed on this side and 1 other case had also a labyrinth operation performed on this side.

Hearing before Operation.—In testing the hearing before operation we have found that—speaking roughly—the conversation voice is heard at about three times the distance at which the whisper is perceived. Further, when the good ear is closed with the finger, a patient hears the conversation voice at double the distance he hears it at when the noise apparatus is placed in the good ear. In 16 of the patients the hearing was not tested—usually on account of the age of the patients: three other patients were deaf-mutes. Of the remaining 219 cases the deafness was severe in 95 (conversation voice at 1 foot or less): moderate in 83 (conversation voice at 1 to 4 feet): 33 had fair hearing (above 4 feet): 8 had good hearing (whisper at 6 feet). (Note: This classification differs from that given in the *Trans. Otol. Sect. Roy. Soc. Med.*, xii, No. 6, p. 33.)

Vestibular Apparatus.—This was tested in 206 cases. In the others it was omitted usually on account of the age of the patient. In cases with a large polypus occluding the meatus only the rotation test was as a rule carried out. Twelve cases showed slight spontaneous nystagmus and one of these swayed slightly on Romberg's test. One patient showed a spontaneous pointing error. Four patients showed a fistula symptom, though in none of the four was a fistula found at operation. Normal rotation or caloric nystagmus was present in 140 cases. In 58 cases the reaction to the cold caloric test was delayed (in 10 of these cholesteatoma was present and in 28 the external meatus was partially blocked by a polypus). In four cases, one of them a deaf-mute, there was no reaction to either test (none of these are included in the section on labyrinthitis).

Indications for Operation.—In several of the cases operated upon, one of the former clinical assistants, Dr. Andrew Campbell, had carried out intra-tympanic syringing according to the method employed by Siebenmann of Basle and Nager of Zurich. It was found that as long as this treatment was continued the discharge was slight or absent, but soon recurred when syringing was stopped. In several of these cases the subsequent radical operation showed that the attic, aditus and antrum were lined by cholesteatoma. In many cases more than one indication for operation was present. (a) Chronic suppurative otitis media and failure of conservative treatment, 33 cases. In this group 4 patients complained of giddiness and 1 of sickness. (b) Chronic suppurative otitis media with polypi or granulations, 93 cases: 11 of these complained of giddiness, 3 of sickness, and 1 patient showed facial paralysis. (c) Chronic suppurative otitis media with pain, mastoid tenderness and polypi, 57 cases: 9 of these complained of giddiness, 2 of sickness: 1 showed facial paralysis and 1 other showed stricture of the canal. (d) Chronic suppurative otitis media, acute exacerbation and subperiosteal abscess, 10 cases: In this group 1 patient complained of giddiness. (e) Chronic suppurative otitis media, posterior perforation,

with or without cholesteatoma, 10 cases: 1 of these complained of giddiness and 1 showed facial paralysis. (f) Chronic suppurative otitis media, attic perforation, with or without cholesteatoma, 24 cases: in this group 6 patients complained of giddiness. (g) Chronic suppurative otitis media with a sinus over the mastoid, 4 cases. (h) Failure of previous mastoid operation, 17 cases. In group (h) 2 patients complained of giddiness and 1 other of sickness.

Operation.

Technique.—Since the publication of his paper on the technique of the radical operation in the *Journal of Laryngology* three years ago the operator has entirely given up the method of skin-grafting there described and has adopted Mr. Marriage's method. In order to focus discussion on the question of technique, we invite the opinion of the members on the following questions:

(1) We wish to ask whether, granted that the labyrinth is healthy, is worth while to remove aural polypi on one or several occasions before proceeding to the radical mastoid operation?

(2) The value of preliminary radiograms of the mastoid processes: During the war it has not been possible to have radiograms taken of our mastoid cases owing to the absence on military service of the late Major Porter and Capt. Gardiner, who were in charge of this branch of Dr. Logan Turner's department.

(3) The line of incision—retro-auricular groove or hair margin?

(4) Is it advisable to excise a crescentic piece of skin in order to brace the auricle up and back?

(5) Hæmostasis: Is it advisable to adopt any method of local anaesthesia—*e. g.* Neumann's, in addition to general anaesthesia? Some American writers advocate the use of adrenalin during the course of the operation.

(6) Method of removal of bone by gouges, curettes or burrs, or by a combination of these three: Some American writers have much to say about necrotic bone found at the radical mastoid operation. In our experience real necrosis is very rare. In the walls of the cavity inflamed and softened bone is often met with, but actual necrosis and sequestrum formation almost never. Bone is very "recoverable" tissue.

(7) Methods of meatal plastic: At what period of the operation should the plastic be performed?

(8) Curettage of tympanic cavity: Use of forceps to remove granulations. Difficulty in dealing with granulations in the region of the oval window and sinus tympani. The operator has found Milligan's labyrinth spoon of service in turning small polypi out of the latter region.

(9) Removal of floor of bony meatus: Richards¹ and Bowers² recommend that this removal be so complete that the hypotympanic cavity is entirely exposed to view through the enlarged external meatus.

(10) Removal of convexity on anterior wall of bony meatus: Bowers apparently exposes the capsule of the temporo-maxillary joint in some cases in removing this convexity, in order to expose the Eustachian tube for after-treatment.

(11) Method of dealing with the Eustachian tube: Richards recom-

¹ *Annals of Otology*, 1918, xxvii, p. 374.

² *Laryngoscope*, 1918, xxviii, p. 794.

mends removal of the processus cochleariformis and the tensor tympani so as to convert the muscular and tubal canals into one. Different types of curettes for the Eustachian tube? Is it possible to remove all mucous membrane from this region, which, in many cases, includes numerous air-cells? Bowers insists strongly on this point, though he admits that the internal carotid artery may be exposed. The jugular bulb also might be opened (J. S. F.). Yankauer claims that 83 per cent. of tubes can be closed by curettage with his instruments through the meatus *without radical operation*, and that in 50 per cent. of cases chronic suppuration is cured by this means. Longee, however, finds that only 8 per cent. are cured. Unless we succeed in closing the tube at the radical operation we have got a muco-cutaneous fistula, and any attack of nasopharyngeal catarrh is liable to be followed by otorrhœa.

(12) *Skin-grafting*: Before application of the graft the operation cavity is syringed out with warm sterile saline solution. Method of application—(a) on gauze or worsted packing, or (b) by filling the cavity with lotion and pipetting off the fluid from below the graft. Is it advisable to cut a small hole in the graft so as to leave the window regions exposed? We believe that, in the presence of a normal labyrinth, the hearing power after operation depends on the integrity of the window niches and the mobility of the structures closing the windows. It would appear possible that the skin-graft might impair this mobility and also to some extent interfere with free access of air vibrations. Contra-indications to skin-grafting.

Findings at Operation (248 Operated Ears).

Superficial Tissues.—Normal, 207: œdema, 2; glandular abscess, 2; subperiosteal abscess, 13; fistula, 10; scar, 14.

Mastoid Cortex.—Normal, 208: deep hollow over site of antrum, 6; cortex eroded, 5; eroded with granulations, 6; fistula, 10; old operation cavity, 13.

Mastoid Process.—Sclerotic, 174; sclero-diploëtic, 31; diploëtic, 12; cellular, 8; contained fibrous tissue, 15; fistula through posterior meatal wall, 1; entirely hollowed out by cholesteatoma, 5; Bezold's abscess, 2.

Mastoid Antrum.—Practically healthy, 50; contained only watery, brownish or blackish fluid, 14; mucus or muco-pus with swollen mucosa, 61; pus and polypoid mucosa and granulations, 57; contained cholesteatoma, 66.

Sigmoid Sinus.—In 202 cases the sinus was not exposed at operation. In 36 cases it was far forward (exposed by gouge) and found normal: in 2 cases it was exposed by gouge and appeared thickened; in 6 cases it was exposed by disease.

Aditus.—In 32 cases the aditus contained cholesteatoma; in 9 it contained granulations or polypi; in 7 the mucosa of the aditus was swollen and congested; and in 3 there was some growth of new bone.

Lateral Semicircular Canal.—The bony wall appeared thin and eroded, but showed no actual fistula in 8 cases: 1 of these cases showed the fistula symptom; 1 case (previously operated upon) showed new bone-formation in the region of the lateral canal.

Ossicles (Malleus and Incus).—Under the conditions in which the radical mastoid operation is performed it is not possible to speak with

certainly as to the condition of the ossicles in every case. After the bridge has been removed there is often so much bleeding that, even with the most careful swabbing, it is not humanly possible to observe in every case whether the incus and malleus are present. For this reason we do not wish to be dogmatic as to our findings, but with this reservation the following statement may be made: Both ossicles healthy, 74; malleus healthy but incus diseased (usually long process of incus eroded or absent), 74; malleus eroded and incus gone, 12; malleus and long process of incus eroded, 1; head of malleus eroded or absent and incus absent, 21; handle of malleus eroded and long process of incus gone, 2; handle of malleus eroded, incus healthy, 3; malleus and incus ankylosed, 6; ossicles absent or not found, 55.

Attic.—In 7 cases the attic showed swollen or polypoid mucosa: in 5 it contained granulations; in 53 cases there was cholesteatoma in the attic; in 1 case the attic was partly filled by new bone formation; in 1 case there was a small hole in the tegmen tympani; in 2 cases the facial canal was eroded.

Tympanum.—A note was made of the condition of the tympanum in 156 cases as follows: Swollen or polypoid mucosa, 28; granulations in tympanum, 44; polypus growing from promontory, 69; polypus from attic, 3; cholesteatoma in tympanum, 11; oval window filled by new bone-formation, 1.

Tube.—In 246 of the 248 ears the tube was curetted; in two cases it was not curetted as it appeared to have been closed by a previous operation; in 9 cases the tube was curetted and touched with chromic acid. In 24 it was curetted and cauterised with the electro-cautery; (5 of this latter group did not report after operation; of the remaining 19 the cavity was satisfactory in 12, though 6 of the 12 required attention; in 2 the cavity was moist; in 5 the tube was still open).

Flap.—With regard to the flap, the operator continues to be satisfied with the results of the Koerner flap, which has been used in practically all cases.

Skin-graft.—Mr. Marriage's method of skin-grafting was adopted by the operator in June, 1916, and since that time 83 of the operations recorded in this paper have been performed. Of these, however, only 70 have been skin-grafted. The remaining 13 were not grafted for the following reasons: (1) The presence of fistula symptom, 2 cases; in one of these the canal prominence proved normal but the stapes was probably loose; in the second case the bony wall of the canal looked thin. (2) Canal eroded, 1 case. (3) Exposure of the dura mater of the middle fossa, 4 cases. (4) Exposure of the middle fossa, giddiness, and abnormality of the canal prominence, 4 cases. (5) Sigmoid sinus exposed by disease and lateral canal eroded, 2 cases.

Progress.—Of the 238 patients 163 made uneventful recoveries. Seven cases had stitch abscesses. In 19 cases the posterior wound suppurated. In 3 cases the graft came away. Eleven had slight fever after operation, 13 had spontaneous nystagmus to the non-operated side, 7 suffered from giddiness and nystagmus, 6 suffered from sickness and vomiting. Five patients after operation developed scarlet fever. The operator is of opinion that this "scarlatina" is, at any rate in some cases, a form of mild (probably streptococcal) septicaemia resulting from the operation—i. e. it is not caught from another case of scarlatina in the usual way. One case developed erysipelas, two cases showed slight swelling of the auricle and three developed

perichondritis. There was no case of post-operative facial paralysis (*i.e.* paralysis present on the day after operation), but five patients developed facial paresis from five days to a week after operation: this trouble soon cleared up. One of the two patients who showed facial paralysis before operation was quite cured afterwards. Two patients developed purulent labyrinthitis after the mastoid operation and had double vestibulotomy performed. Both recovered. These two cases are dealt with in the section on labyrinthitis: Two fatalities followed the radical operation:

CASE 1.—K. W——, female, aged forty-four, suffered from chronic suppurative otitis media and aural polypi, bilateral. Labyrinths healthy. First operation (radical mastoid on left side): Pus and granulations found with necrosis of ossicles; skin-graft applied; aural polypus removed from right ear. Operated ear did well but discharge from right ear continued. Later, radical operation on right ear showed similar conditions to those on left side, sinus exposed with gouge but appeared normal, skin-graft applied. Temperature rose continuously for three days after operation and patient had a rigor. Stitches removed and also skin-graft. Patient developed a cough and blood-stained expectoration: blood-culture showed streptococcus. Intravenous injection of eusol given. Death. *Post-mortem*: Old pleural adhesions, emphyema of right side, large infarct in lower lobe of right lung. Cerebral sinuses showed no thrombosis.

Remarks.—This case appears to have been one of septicæmia following the exposure of the sinus at the radical mastoid operation. The sinus was not injured and accordingly a skin-graft was applied to the operation cavity. It is of interest to note that this patient appeared to have a presentiment of evil before the second operation, and insisted on making her will—a thing she had not done before the first operation.

CASE 2.—R. S——, male, aged five, suffered from chronic suppurative otitis media, with acute mastoid exacerbation, enlarged tonsils and adenoids. Radical mastoid operation: Cholesteatoma present. Child fell out of bed on the day following operation and afterwards became unconscious. Operation wound opened up but nothing abnormal found. Lumbar puncture yielded clear fluid under normal tension. Death on evening following operation. *Post-mortem* refused. Cause of death uncertain—Status lymphaticus? Septicæmia? Acidosis? Injury to skull?

Mortality.—Mr. Heath claims a mortality of 1 in 360 and Mr. Adair Dighton of 1 in 54 for the modified radical operation. Mr. Dighton¹ writes as follows: "In the chronic cases the risk to life in a Heath's operation is practically *nil*, whereas the radical mastoid operation boasts a death-rate of at least 16 per cent. in these cases ("Report of Ear Department, Royal Infirmary, Edinburgh," March, 1912). We hold that this statement is calculated to give an entirely erroneous impression. If Mr. Heath and his followers intend only to plead for early operation in cases of middle-ear suppuration, which do not yield to more conservative measures, few will be found to disagree. If, on the other hand, they wish to indicate that the modified radical operation is safe, whereas the radical mastoid operation is dangerous, we hold that they are misleading the medical profession. They must distinguish between the radical operation as performed in cases of middle-ear suppuration alone and the same procedure when carried out *en route* to the relief of labyrinthine and intracranial complications already present when the patient is admitted. In the first case the radical operation according to our statistics in this paper has a death-rate of 2 in 238 cases, or, if the 52 cases previously reported be included, of 2 in 290 cases. In the second case the mortality is admittedly

¹ "A Manual of Diseases of the Nasopharynx," p. 126, London, 1912, Baillière-Tindall & Cox.

severe but the fatalities cannot in fairness be attributed to the radical operation. If a patient with extrinsic cancer of the larynx has a preliminary tracheotomy followed by excision of the larynx, we do not attribute his death, should it occur, to the former procedure.

After-treatment.—It is almost superfluous to go back to the methods of after-treatment adopted before the days of skin-grafting, according to Mr. Marriage's method. The writers have no experience of the Carrel-Dakin method, which seems to be associated with special difficulty in the after-treatment of the radical mastoid operation. French writers have recommended ambrine—a form of paraffin, which is poured into the cavity and in which a wick of gauze is implanted to facilitate removal. This treatment is begun from the fifth to the eighth day after operation, and is continued for fifteen or twenty days. Guisez recommends Vincent's powder (1 part calcium hypochlorite to 9 parts of boric acid), but again we have no experience of this method. Our own practice in cases which have been skin-grafted is to pack the cavity with iodoform worsted at the time of operation and to leave the wound alone for five days. At the end of this time the stitches are removed, including that retaining the meatal flap. The iodoform worsted packing is also removed and the cavity mopped out with sterile gauze. The cavity is then re-packed for a further period of two days with iodoform worsted and the dressings reapplied. Thereafter no further packing is employed, and the case is treated by means of syringing until the superficial layers of the graft come away and a dry cavity has, if possible, been obtained. The meatus is left open in the daytime but at night a piece of iodoform gauze is inserted, though the cavity itself is not packed.

The progress of the case after operation appears to depend to a considerable extent upon the general condition of the patient. The operator has noticed that the cases dealt with at the Edinburgh War Hospital, Bangour, have made better recoveries than those in the Royal Infirmary, and attributes this fact to the better physique and general health of the patients in the former institution.

Stay in Hospital.—The average duration of the stay in hospital after operation was twenty-two days. We have often felt that it is rather a waste of hospital space and of nursing skill to keep patients in hospital for several weeks after the radical mastoid operation. If the patient lives in town the question is easily settled, because he can come up once or twice a day for treatment. If, on the other hand, he lives in the country, the question is more difficult. If we send such a patient home we have to entrust the after-treatment to a relation or friend who most probably has had no experience of ear work. The patient's doctor, even if he knows anything about after-treatment, cannot afford the necessary time. We have often thought that it would be a good thing if, instead of retaining these patients in hospital, some less elaborate and expensive form of lodging could be provided near the Infirmary for country cases which require attention once or twice daily.

After-care of the Operated Ear.—Even after the case has apparently made a satisfactory recovery and the cavity has been completely lined with epithelium, some attention is necessary if things are to remain satisfactory. It is our experience that, unless the operation cavity is treated at regular intervals by means of peroxide drops and syringing with luke-warm soda solution, drying and the instillation of spirit and boric acid drops, wax and epithelium accumulate, so that in time the

cavity becomes filled with putty-like material in which there is some pus. Printed instructions are now given to all "radical mastoid" patients on leaving hospital, but it is the exception to find that these instructions have been followed. As a rule the patients confess, when they report for inspection, that nothing has been done to their ears since they left the infirmary. In many cases the auricle and mastoid region have not even been washed with soap and water.

Results.

We have found that accounts given by patients concerning the condition of their ears after operation are quite untrustworthy. When they returned to report some patients stated that their ears were quite dry and yet examination showed that discharge was still present. Others told us that their ears were still discharging, though inspection proved that they were quite dry. We accordingly decided not to send out a *questionnaire* and to depend only on personal examination of our operated ears. Sixty-three per cent. of the cases reported when written for. This is fairly satisfactory considering the difficulty and expense of travel in recent times.

The main point brought out by the examination of the patients who reported was that the persistence of Eustachian catarrh or suppuration is the main source of failure after the radical mastoid operation. We have not as yet found an efficient method of closing the Eustachian tube. The radical operation does appear, however, to free the patient from the danger of an intracranial complication. We know of no case in which such a complication has arisen after the radical mastoid operation has been performed. Dr. Logan Turner tells us that this is also his experience.

Results in the Non-skin-grafted Cases (171) reported on by Dr. Garretson.—Of 171 patients, 107 presented themselves for inspection at periods of from three months to five years after operation. Three of these 107 were patients who had had both ears operated upon, so that 110 of the 178 operated ears were seen. Of these, 37 appeared to be cured, while 10 others were very satisfactory except that they showed want of care (an accumulation of wax and desquamated epithelium). This gives 43 per cent. of cures. In 24 cases the inner wall of the cavity was moist, but there was no pus. There was still some purulent discharge in 27 cases. In 1 case the cavity was filled with cholesteatoma. In 3 cases a false membrane had formed, almost shutting off the deeper part of the cavity. In 4 cases there were granulations in the operation cavity. Three cases showed a permanent opening behind the ear. One showed a keloid in the mastoid scar and a large amount of *débris* in the cavity.

Hearing after Operation.—This was tested in 93 cases, as follows: Hearing improved, 35 (38 per cent.); the same, 36 (39 per cent.); worse, 22 (23 per cent.).

(To be continued.)

THE AQUEDUCT OF FALLOPIUS AND FACIAL PARALYSIS.

By DAN MCKENZIE.

PART I: THE AQUEDUCT OF FALLOPIUS.

(Continued from p. 344.)

The stylo-mastoid foramen is covered by the development of the mastoid process after the age of two years.

The depth of the several parts of the canal from the surface which enter into consideration in performing the mastoid operation are as follows:—

In Adult Bones :

At Bend (36 bones).—Highest, 22 mm.; lowest, 10 mm.; average, 15 mm.

In Upper Mastoid Segment (37 bones).—Highest, 21 mm.; lowest, 7 mm.; average, 14·3 mm.

At Stylo-mastoid Foramen (37 bones).—Highest, 17 mm.; lowest, 7 mm.; average, 11·6 mm.

In First Decade :

Pyramid Segment—

At birth 5 mm. (approx.).

At 11 months 3 „

At 18 months 7 „

Thereafter (7 bones): Highest, 12 mm.; lowest, 8 mm.; average, 11 mm.

Upper Mastoid Segment :

At 11 months 3·5 mm.

At 18 months 5 mm.

Thereafter (5 bones): Highest, 11 mm.; lowest, 8 mm.; average, 9·6 mm.

Stylo-mastoid Foramen (see p. for conditions at birth and in first year):

Thereafter (7 bones): Highest, 9 mm.; lowest, 5 mm.; average, 7·3 mm.

So that in the first decade the average depth of the canal from the surface is considerably less than it is in adult life. But it should be noted that the highest infantile measurement exceeds the lowest adult readings.

Embryology of the Aqueduct of Fallopius.

The earliest available specimens show the facial nerve already formed lying in the fork of the hyoid bar (see wax model of 16 mm. human embryo by J. G. Jenkins in the Cheatle Collection).

For the later development I am indebted particularly to information published by Mr. (now Sir) John Bland Sutton in 1883.

The nerve-trunks are laid down, or rather they emerge along their routes prior to the formation of the membrano-cartilaginous framework of what later is the temporal bone, and it is owing to the uneven development of that bone that the facial nerve owes its long and tortuous course. And this development, as we have seen, takes place principally subsequent to birth.

From its first appearance along with the cartilage of the petrous it runs very much the same course until birth.

At the fifth month, and indeed earlier as well as later, the nerve lies open save and except as it passes through the petrous, where its position between the internal auditory meatus (at this period scarcely in existence as such) and the geniculate angle is under a bridge of cartilage about, at the third month, from 2 to 2.5 mm. in length. From the geniculate ganglion to the stylo-mastoid foramen the nerve lies in a shallow groove or gutter, which later becomes the tunnel containing the tympanic, the pyramidal, and the vertical segments of the nerve.

This groove is separated from the cartilaginous ossicles by the epithelial pouch or membrane, which by the sixth month is fairly stout, and encloses as it were in a bag what becomes at a later date the tympanic cavity.

The tympanic segment of the facial canal which runs between the external semicircular canal is, according to Bland Sutton, completed by the ossification of the pterotic ridge (tegmen tympani), which "grows over it to ankylose with the pro-otic and opisthotic, thus shutting off the tympanum by only a very thin plate of bone."

The ossification of the tympanic covering of the canal probably passes by way of membrane, since in adult life the dehiscences of the canal when present are covered with a fibrous membrane.

The geniculate ganglion is surrounded by the pterotic (tegmen tympani) growing forward. The ganglion, however, is not covered with bone until several months after birth, so that in foetal life and at birth the hiatus Fallopii is a fossa, not a foramen.

The chorda tympani passes between the fine annulus tympanicus and the cartilaginous labyrinth capsule to reach the lingual without traversing any canals, while the same is true of all the other branches and communications of the facial.

The true "foramen of exit" of the facial is, therefore, that short segment of the canal in the petrous. All beyond that is extra-cranial.

The ossification of this part of the canal is brought about by the fusion of the ossifying processes from the pro-otic and opisthotic centres of ossification, the former beginning directly posterior to the internal auditory meatus and the latter on the promontory.

The stylo-mastoid foramen is formed by the union of the post-auditory process of the squamosal with the pterotic posteriorly and the tympanic bone anteriorly.

At the fourth and fifth month the nerve emerges behind the annulus and the opening appears relatively higher than it is even at birth.

The nerves and cartilaginous ossicles at this period are relatively large and easy of recognition.

At birth the stylo-mastoid foramen is very large, and sometimes the cavity of the posterior pyramid opens on the outer wall of the skull.

The accompanying stereoscopic radiograms of the temporal bone are taken with a wire in the Fallopian canal, in order to illustrate the relationship of the canal to the other constituents of the bone. Temporal bones of three periods of life are illustrated, in adult life (Figs. 34-37); in infancy (Fig. 38); and at birth (Figs. 39-42).

The insertion of the wire necessitated a little ingenuity and patience, but it was accomplished by threading both of its ends from the hiatus Fallopii, one end going by way of the tympanic segment of the canal to the stylo-mastoid foramen, the other through the petrous to the internal auditory meatus.

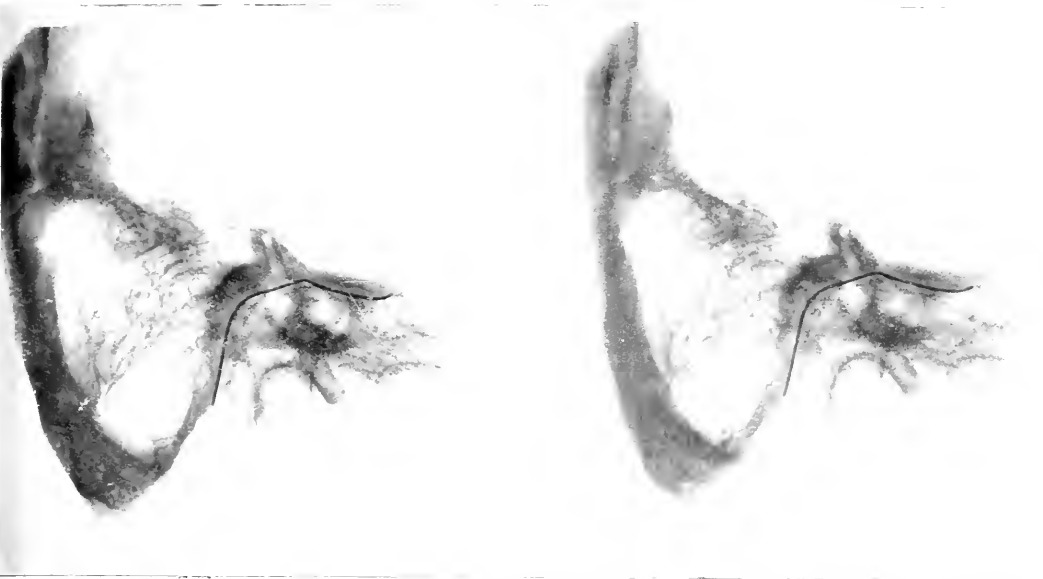


fig. 34.—Right adult temporal bone, viewed from the front. Note the dense outer cortex of the mastoid process, covering highly cellular (pneumatic) bone. The superior semicircular canal is seen on end above the middle segment of the wire in the Fallopian canal. Immediately below the same segment is a clear space which indicates part of the vestibule, and perhaps the oval window. With the stereoscope the floor of the tympanic cavity is distinguishable. To the petrous side of the tympanic cavity two curved whorls of the co-dilex are clearly visible. The horse-shoe shaped shadow between the stylo-mastoid foramen and the petrous is the dome of the jugular foramen; note its relationship to the stylo-mastoid foramen.

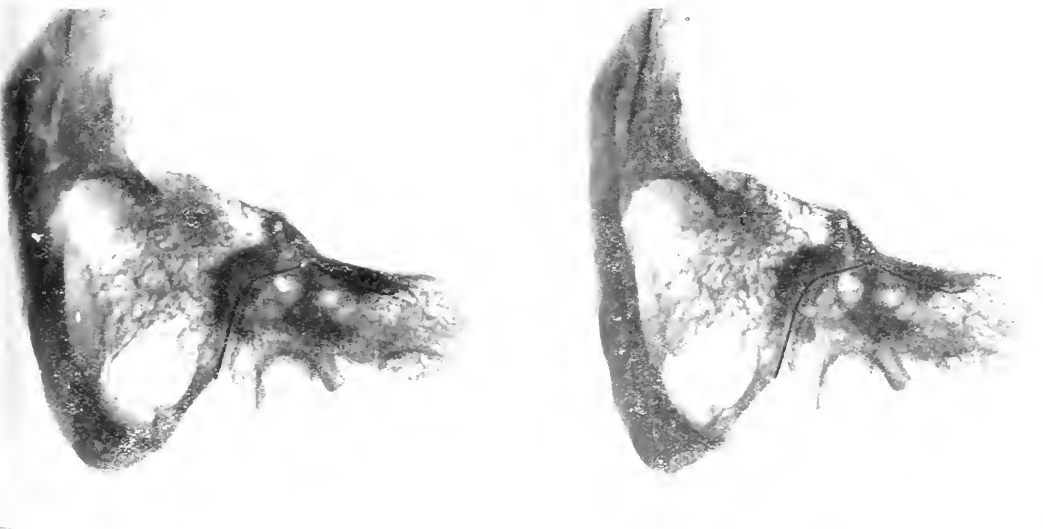


Fig. 35 is the same as Fig. 34, with the outline of the oval window more distinctly traceable.

TO ILLUSTRATE DR. DAN MCKENZIE'S PAPER ON THE AQUEDUCT OF FALLOPIUS AND FACIAL PARALYSIS.



FIG. 36.—Right adult temporal from behind. The mastoid process is acellular. Above and to the outer side of the tympanic segment of the Fallopian canal, containing the wire, is a clear space corresponding to the mastoid antrum. The superior semicircular canal appears as a clear horse-shoe-shaped space medial to the antrum and above the horizontal segment of the Fallopian canal. The external semicircular canal is also visible, end on, in the clear space lying between the angle of the Fallopian canal and the mastoid antrum.

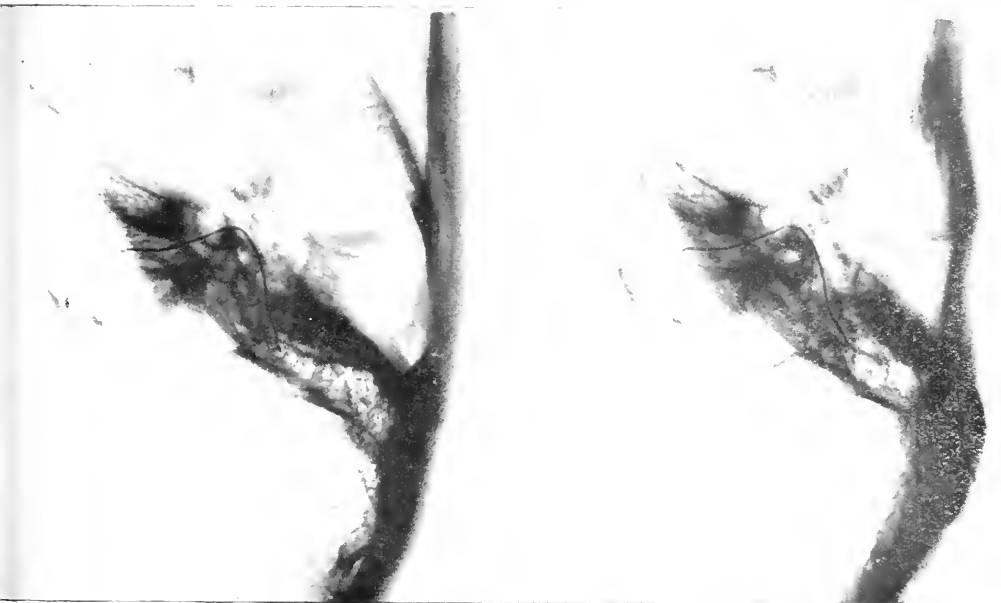


FIG. 37.—Right adult temporal from above. Note first the shadow of the squamous, end on. On its inner (left) side are two triangular clear areas: the larger and more anterior is the glenoid fossa; the posterior is the external auditory meatus, and this followed inwards (to the left) leads to the tympanic cavity with the shadows of the malleus and incus. If from these shadows an imaginary line be drawn across and at right angles to the wire in the Fallopian canal and prolonged into the dense petrous shadow it will lead to a small clear circular spot, which the stereoscope will show to merge into a sweeping curve traversed by the shadow of the wire as it lies in the petrous. This curve is the basal coil of the cochlea. (This figure requires careful adjusting in the stereoscope.)

c



FIG. 32.—To show a fully formed, though short, mastoid segment at age of thirteen. In other respects the relations are those of adult life. A. Stylo-mastoid foramen. B. Section of membrana tympani. c. Malleo-incudal articulation. D. Antrum. A few mastoid cells are visible. (Bone 47, right temporal, natural size and pose, male, aged thirteen.)

A



FIG. 33.—Fallopian canal and tympanum at age of two. Note angular bend of the former. A leads to the antrum, in which can be seen the prominence of the external (lateral) semicircular canal, over-leaning the Fallopian canal towards its geniculate end. Below the tympanic segment lies the oval window. (Bone 21, same as in Fig. 30.)

DETAILED SUMMARY OF MEASUREMENTS.

Decades from the Second to the Seventh.

SUMMARIES.

From Digital Fossa of Mastoid Process to the Tip.—Twenty-seven bones valid. Highest (H.)=15 mm. Lowest (L.)=4 mm. Average (Av.)=9 mm. (approx.).

From Lateral Sinus Groove to Posterior Meatal Wall.—A. In cellular bones=19 valid.

H.=20 mm. L.=10 mm. Av.=13.9 mm.

B. In acellular bones=15 valid.

H.=15 mm. L.=3 mm. Av.=9.7 mm.

(N.B.—The difference in this finding is worth noticing.)

Stylo-mastoid Foramen lies above the Inferior Lip of the Bony Meatus by—H.=10 mm. L.=2 mm. Av.=5.15 mm.

Distance of Vertical (Mastoid) Segment of Fallopian Canal from Posterior Wall of Bony Meatus.—A. In cellular bones=23 valid.

H.=4 mm. L.=2 mm. Av.=3 mm.

B. In acellular bones=16 valid.

H.=5 mm. L.=2 mm. Av.=3.2 mm.

Distance of Start of Vertical from Floor of Aditus (33 bones).

H.=6 mm. L.=2 mm. Av.=3.5 mm.

External Semicircular Canal Overhanging the Fallopian Canal (31 bones) by from 3 mm. to zero (i. e. in some there was no overhang).

Lengths of Segments of Aqueduct of Fallopius.—(a) Internal auditory meatus to lamina cribrosa (39 bones).

H.=10 mm. L.=3 mm. Av.=6.6 mm.

(b) Lamina cribrosa to geniculate bend (39 bones).

H.=6 mm. L.=2.5 mm. Av.=3.9 mm.

(c) Geniculate to pyramidal bend (the tympanic segment) (40 bones).

H.=11 mm. L.=4 mm. Av.=7.8 mm.

(d) Pyramidal bend (39 bones).

H.=6 mm. In several it was too acute to be measured.

(e) Vertical (mastoid) segment (40 bones).

H.=16 mm. L.=6 mm. Av.=9.8 mm.

Total Length of Course of Facial Nerve in Temporal Bone (40 bones).

H.=3.9 cm. L.=2.1 cm. Av.=3 cm.

Depth from External Surface of Bone (36 bones).

(a) At bend (pyramid).

H.=22 mm. L.=10 mm. Av.=15 mm.

(b) At upper end of vertical (mastoid segment) (37 bones).

H.=21 mm. L.=7 mm. Av.=14.3 mm.

(c) Stylo-mastoid foramen (37 bones).

H.=17 mm. L.=7 mm. Av.=11.6 mm.

RELATIONS.

Geniculate Bend to Anterior Border of Foramen Ovale (36 bones).

H.=5 mm. L.=2 mm. Av.=3.15 mm.

Upper Border of Foramen Ovale to Fallopian Canal (29 bones).

H.=2 mm. L.=“adjacent.”

Posterior Border of Foramen Ovale to Pyramidal Bend (31 bones).

H.=6 mm. L.=2 mm. Av.=3.4 mm.

From External Semicircular Canal across Fallopian Canal to Promontory (25 bones).

H.=8 mm. L.=3 mm. Av.=5.4 mm.

Stylo-mastoid Foramen to Groove of Lateral Sinus.—(a) In cellular bones (23 bones).

H.=13 mm. L.=4 mm. Av.=7.6 mm.

(b) In acellular bones (16 bones).

H.=9 mm. L.=2 mm. Av.=6.1 mm.

Stylomastoid Foramen to Jugular Foramen (37 bones).

H.=11 mm. L.=2 mm. Av.=4.8 mm.

Relations of Vertical (Mastoid) Segment of Fallopian Canal to Membrana Tympani (21 bones).—1) The canal was entirely medial to the membrane in 4.



DESCRIPTIONS OF FIGS. 38 TO 40.

FIG. 38.—Left temporal of infancy, from without. The squamous portion with the zygoma is plain. Note the rudimentary mastoid. The abrupt line between the dense petrous shadow and the clearer bone behind marks the groove for the lateral sinus. The clear space in the centre of the petrous shadow is the external auditory meatus, the floor of which can just be made out in the stereoscope. This clear area corresponds also in part to the internal auditory meatus. (Note the vertical and tympanic segments of the Fallopiian canal, and at the anterior end of the latter the acute geniculate bend, leading to the petrous segment of the canal seen in perspective in the stereoscope. (The sharp hook-like bend at this end of the wire is an artefact.)

FIG. 39.—Right temporal at birth, from without. At this age there is no bony external auditory meatus; nor is there any mastoid process. Thus there is no vertical segment to the Fallopiian canal, and the stylo-mastoid foramen opens on the surface of the skull behind the tympanic ring (see also Figs. 28 and 29), indicated here by the higher end of the wire. The geniculate bend is well shown, and so is the petrous portion of the Fallopiian canal. Below and in front of this last is the cochlea, while the semicircular canals are visible behind the outer end of the wire. Note that some of the canals are seen as if cut across.

FIG. 40.—Same as Fig. 39, from within. The features are the same, but in addition it is possible in this beautiful picture to distinguish the canals more in detail, and to see the rudimentary mastoid antrum cells.



FIG. 38.



FIG. 39.



FIG. 40.



FIG. 11. The same. Features the same.



FIG. 12.—The same from without, obliquely posed (the zygoma pointing upwards at an angle of 45° instead of being horizontal).

TO ILLUSTRATE DR. DAN MCKENZIE'S PAPER ON THE AQUEDUCT OF FALLOPIUS AND FACIAL PARALYSIS.

(2) It occupied a plane equivalent to that of the centre (umbo) of the membrane in 4.

(3) It corresponded to the inferior margin of the membrane in 7.

(4) It corresponded to the posterior margin of the membrane in 6.

(The above are approximate; in none was it found to occupy a plane lateral to those of the whole membrane.)

Hugh Jones's line was found to be (a) *correct* in 28 out of 32 valid bones. (Of these in 7 it erred on the side of safety.)

(b) It intersected the "bridge" in two specimens—one aged four, the other aged fifty-four.

(c) In two cases the line could not be defined; in one of them the floor of the meatus presented no elevation, in the other the bony meatus was too short.

ADDITIONAL DATA.

Relation of Vertical "Segment" to Mastoid Cells.—The cells were as remote as 5 mm. in some, and were closely adjacent to the canal in many.

Sinus Tympani (35 bones).—In 13 the sinus tympani was "shallow."

In 21 it "undercut" the Fallopian canal.

In one it passed deep to the Fallopian canal and opened into mastoid cells. In one or two specimens it was noted as being "in contact with a mastoid cell, but not communicating with that cell."

The petrous segment forms an angle with the axis of the internal meatus of (in 26 bones) from 60° to 15°, the average being (approx.) 28°.

In the Tympanum.—The canal makes with the horizontal an angle (in 32 bones) of from 50° to 7°, the average being 25°.

And with the sagittal (approx.) of from 85° to 30°, the average being 53°.

It would be inadvisable to summarise the details of the first decade, but the salient features and distinctions of early life are dealt with in the text.

THE TREATMENT OF ENLARGED OR DISEASED TONSILS IN CASES WHERE SURGICAL PROCEDURES ARE CONTRA-INDICATED.¹

BY IRWIN MOORE, M.B., C.M.E.DIN.,

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THERE are a certain number of patients suffering from enlarged or diseased tonsils in whom either surgical interference is contra-indicated or postponement advisable on account of special constitutional conditions or idiosyncrasies. Again there are some patients who refuse operation on account of fear or prejudice. Fortunately such prejudice, the result in many cases of ignorance, is less prevalent at the present day than in the past, since the dangers which underlie the presence of a diseased tonsil have been fully recognised.

There still exists, however, amongst professional singers a strong feeling against any surgical interference, as likely to damage their voice.

In view of the fact that serious contra-indications may exist, it is important, before advising operation, that the general health of each patient should be thoroughly investigated, in order to isolate those cases which present special features, and which are likely to add undue risk to surgical interference, or demand greater responsibility on the part of the operator. It is also important to realise, as shown by George H. Wright² (Boston), that enlargements of the tonsils may be physiological and of a temporary character—depending on the stimulation accompanying the four periods of molar eruption.

¹ Paper read at the Summer Congress of the Laryngological Section of the Royal Society of Medicine, May 2, 1919.

² *Bost. Med. and Surg. Journ.*, 1909, clx, pp. 635-641.

The popularity of tonsillectomy (in which term is included the incomplete—*i. e.* tonsillotomy—and complete operations either by guillotine or dissection) has reached such a height that, according to one writer, almost every pathological condition is considered good grounds for radical operation.

This popularity and the position which operative treatment now holds is undoubtedly the result of increased knowledge, and of a fuller appreciation of the fact that the unhealthy tonsil is one of the chief breeding-grounds and portals of entry into the body of active micro-organisms, and is responsible for many systemic infections. Experience has amply proved in many cases the necessity for radical treatment.

The opinions of some operators in reference to the removal of the tonsils are so pronounced that they consider it almost criminal to leave behind the smallest fragment of tonsillar tissue. One writer in referring to this exactitude says—"Like oöphorectomy in the past the craze for tonsillectomy has run wild, and now seems to have reached its height," and he expresses the hope that "from now onward there will be less indiscriminate operating and more skilful work done." There are undoubtedly some grounds for these opinions, for unfortunately some operators advise complete enucleation by dissection or guillotine as a routine procedure in both adults and children in every case brought before them, and show little care in differentiating between the healthy or temporarily enlarged tonsil and the diseased organ, whilst others show only small consideration for the general health of the patient before deciding the question of operation. Again, little attention is given to the preparation of the patient for operation. Such neglect in discrimination and judgment together with imperfect technique indirectly react to the discredit of operative procedures, and to the detriment of the patient. For example many cases have been recorded in which the tonsils have been removed in hæmophilic, anæmic or delicate children, whose blood-coagulating power is poor, resulting in serious hæmorrhage, from which the patients have taken months and even years to recover.

Shurly¹ remarks that "tonsillectomy in one case of pernicious anæmia, acute leukæmia or hæmophilia is sufficient to impress the surgeon with the value of blood examination in all suspected anæmias, and to establish the advisability of a routine examination to determine the coagulation point."

Again, patients have been operated upon during or about the time of their menstrual period, thus leading to an enormous and unnecessary loss of blood. Also chloroform has been employed in the past, and is still being used in cases suspected of belonging to the "status lymphaticus." Is it, then, surprising that serious and fatal results follow?

While all extensively diseased tonsils should be enucleated, it is probably safe to say, according to T. R. French² (New York), that at least 80 per cent. of enlarged tonsils do not contain foci of infection and therefore do not need to be completely removed. Whillis and Pybus³ estimate them at 50 per cent.

Henry L. Swain⁴ (Newhaven, U.S.A.) remarks: "If it is necessary to operate in children upon the faucial tonsils which are merely large and

¹ B. R. Shurly (Detroit), *Journ. Amer. Med. Assoc.*, 1910, lv, p. 1527.

² *New York Med. Journ.*, 1914, c, p. 1097.

³ *Brit. Med. Journ.*, 1911, ii, p. 1402.

⁴ *Ann. Otol., Rhinol., and Laryngol.*, 1911, xx, p. 545.

not diseased, then there are surely perfectly safe, sane and effective methods other than complete tonsillectomy to deal with the problem."

In view of such opinions it would seem that the time had now arrived when we may review the situation from an unbiased point of view and consider whether too much operating is really being done, and whether any satisfactory non-surgical procedure offers itself for those cases in which serious affections of the general health accompany the tonsillar disease and contra-indicate surgical interference. I propose first to consider those conditions in which surgical procedures are contra-indicated, and in some cases a positive danger, next to discuss the various non-surgical remedies which from time to time have been advocated, and finally to draw special attention to those methods of treatment by which the enlarged tonsil may be satisfactorily dealt with. One method, long overlooked and discarded, I venture to revive in the hope of re-installing it in its proper position, viz. as a useful substitute and as the treatment of choice in certain cases in which radical operation is contra-indicated.

The following are frequently considered as Contra-indications for the Surgical Removal of the Tonsils.

I. LOCAL.

1. *Acute Tonsillitis*.—Acute inflammations or infections due to the streptococcus, scarlet fever, measles, diphtheria, or in association with rheumatic fever, ulcero-membranous tonsillitis (Vincent's angina).

2. *Physiological Enlargement* of temporary character accompanying the four periods of dentition.

3. *Professional Voice-users*.

II. GENERAL.

1. *Cardiac Diseases*, e. g. endocarditis and pericarditis in association with or following tonsillitis.

2. *Advanced Cardio-vascular Changes*, i. e. in individuals who have a tendency to hæmorrhages, and whose condition would be endangered by any sort of surgical procedure.

(a) *In constitutional diseases* where anæmia is very marked and where any loss of blood would be of serious importance to the patient's health, e. g. in chlorosis, pernicious anæmia, leukæmia and Hodgkin's disease.

(b) Where there is a *low coagulating power of the blood*, e. g. in true hæmophilia, cholæmias, purpuric diseases, etc.

(c) Where the blood-pressure is over 225 systolic.

(d) In arterio-sclerosis.

3. *Advanced Tuberculosis*.

4. *Syphilis*, particularly those cases with ulcerative processes.

5. *Kidney Diseases*, e. g. Bright's disease. Many cases have been observed in which nephritis has followed acute follicular tonsillitis.

6. *Advanced Cases of Diabetes Mellitus* in association with acute follicular tonsillitis.

7. *Grave Nerve or Mental Disease* in which marked excitation is present, e. g. chorea, exophthalmic goitre, the maniacal state, etc. In a series of cases of exophthalmic goitre it was found that 79 per cent. had accompanying enlargement of the thymus gland (Capeille).¹

¹ Quoted by Shurley in discussion on Delavan's paper, "Skiagraphy in Diagnosis of Enlargement of the Thymus Gland," *Trans. Amer. Laryngol. Assoc.*, 1914, p. 70.

8. *Enlargement of the Thymus Gland*, either alone or associated with the "status lymphaticus."

The Consideration of Non-surgical Methods of Reduction or Destruction of the Enlarged or Diseased Tonsil which have from time to time been advocated.

A. ORGANO-THERAPY.

Lymphatic Gland Extract.—Hugh Ashby¹ (Children's Hospital, Manchester) refers to the fact that one of the chief functions of the lymphatic tissues is to form lymphocytes, and that at the age when enlarged tonsils and adenoids are common (two to five years) the lymphocytes are normally beginning to decrease from the high percentage found in infants to the adult standard, also the thymus is decreasing in size.

He thinks that the enlargement of the tonsils and adenoids is an attempt on the part of nature to supply the deficiency in the other lymphoid tissue of the body.

He therefore suggests supplying these children with lymphoid gland extract gr. v three times a day—for the same reason that enlargement of the thyroid gland may diminish in size if thyroid gland extract be given, showing that the gland enlarges to make up for some deficiency in its secretion, and that where the deficiency was made up artificially the gland went back to its normal size.

He has treated 30 cases in this way and nearly all the children improved, snoring and noises in breathing disappeared and the tonsils diminished in size.

B. CHEMICAL.

1. *Absorbents, e. g.* Iodine preparations.—Their specific action in producing absorption of lymphatic enlargements is limited to the earlier periods of hypertrophy, and though sometimes they may accomplish it in the very early periods of life, they are useless in the ordinary run of cases (Bosworth).²

Morell Mackenzie³ says tincture of iodine has often been recommended, but it has little effect in resolving the hypertrophy.

2. *Mineral Astringents.*—Their usefulness is open to serious question, their action being limited simply to the reduction of the inflammatory process, and they have no influence on the hypertrophy (Bosworth). The best are powdered alum or tannic acid applied with a moistened spatula, glycerine of tannin, zinc sulphate 5 to 10 gr. to the ounce, copper sulphate 3 grains to the ounce. A favourite application in the past was tinct. iodine with tinct. catechu and glycerine equal parts.

Morell Mackenzie⁴ says astringent preparations are often productive of decided benefit, but such agents never cause any considerable reduction of the gland structure. *

3. *Caustics or Escharotics.*

(a) *Mineral Astringents* (mildly caustic), *e. g.* silver nitrate, zinc chloride, perchloride of iron.

¹ Hugh Ashby, "The Cause of Enlarged Tonsils and Adenoids in Children and their Treatment with Lymphatic Gland Extract," *Brit. Med. Journ.*, May 31, 1913, p. 1159.

² "Diseases of the Nose and Throat," 1892, Amer. edit., p. 141.

³ "Diseases of the Throat and Nose," 1880, i, p. 68.

⁴ *Op. cit.*, p. 68.

Silver Nitrate, in varying strengths, 10 to 20 gr., or the fused salt on a probe applied to the surface of the tonsil or inserted into the crypts, has been used with varying results for many years for promoting sclerosis and reduction of the hypertrophied tonsil or for destroying the crypts. In addition to its astringent action it is said to possess the power of promoting absorption. It forms an insoluble compound with the albumen of the tonsil—an albuminate of silver—but its action is very limited, too superficial and too slow, hence it has fallen into disuse. Even with solid nitrate of silver it is so slow that it requires about six months to remove the tonsil by this process. Morell Mackenzie¹ says it seldom materially lessens the bulk or improves the pathological condition of the tonsil, and that when the tonsils are really hypertrophied the remedy must be of a destructive character and escharotics must be used. Goodale² (Boston) recommends that silver nitrate should be introduced not only into the crypts, but also by injection into the substance of the tonsils themselves by means of a hypodermic syringe. Eight to ten injections of a solution varying from a 4 to 8 per cent. are used at intervals of four days, resulting in a rapidly progressive symmetrical diminution in the size of the tonsils, until after ten injections they were one-fourth the original size. Arthritis from which the patients were suffering also improved simultaneously.

Its effect, he says, "is theoretically in harmony with the normal process of retrograde metamorphosis of the organ by a sclerosis proceeding from the base of the organ to the periphery and leading to a symmetrical diminution in the size of the organ." He recommends the procedure in chronic inflammation of the tonsils where excision is contra-indicated.

Perchloride of Iron.—The most effective mineral astringent is a solution of perchloride of iron 1 to 2 drms. with water or glycerine 1 oz., painted over the tonsils once or twice daily with a brush.

(b) *Mineral Acid Caustics*, e.g. nitric, hydrochloric, lactic, trichloroacetic and chromic acid have been tried for the destruction of the enlarged tonsil, but the objection to their use is that they cause marked inflammatory reaction and it is extremely difficult to limit their action. They only act superficially and slowly.

Acetic Acid.—Morell Mackenzie³ stated that he had treated a few cases successfully by parenchymatous injection of dilute acetic acid (B.P.) with a curved syringe, but the treatment was slightly painful and required from ten to fifteen injections.

Chronic Acid.—In chronic hypertrophic tonsillitis where the crypts are diseased they may be cauterised with chromic acid crystals fused on a probe and inserted into the crypts, or the crystals may be melted and applied on a small, tightly wound right-angled cotton applicator inserted deeply into the crypts. Donaldson⁴ (Baltimore) had a good deal of success in reducing

¹ "Diseases of the Throat and Nose," 1880, i, p. 68.

² "The Treatment of Inoperative Tonsillar Hypertrophy by Interstitial Injections of Silver Nitrate," *Trans. Amer. Laryngol. Assoc.*, 1908, p. 43.

³ *Op. cit.*, p. 69.

⁴ Quoted by Solis-Cohen, "Diseases of the Throat," 1st edit., New York, 1872, p. 132.

tonsils by making small incisions into the enlarged tonsils, and then holding a crystal of chromic acid in the cut for some moments.

(c) *Alkaline Caustics*.—Attempts have been made with success to destroy the enlarged tonsils by means of powerful caustics. The alkaline caustics, such as caustic potash or soda, are preferable because their compounds with albumen are soluble in water, and they therefore extend their action much more deeply into the tissues. They destroy the vitality of any tissue to which they are applied and reduce the size of any diseased mass by a piecemeal process of disintegration. There is a difficulty, however, in keeping caustic potash localised and away from the surrounding tissue. W. J. Smith¹ overcame this difficulty by using a small platinum disc mounted on a handle on which he fused the caustic potash, which was kept in contact with the tonsil for a moment or two, the complete destruction being completed in six or seven sittings.

Potassa cum Calce (Vienna Paste) is a non-official preparation of caustic potash, and consists of caustic potash 5 grm., slaked lime 6 grm., and rectified spirit sufficient to make a mass. Fournic² (Paris) in 1863 published particulars of 52 cases of enlarged tonsils which he had treated with Vienna paste. Three weeks was the average duration of the treatment, and in some instances only a fortnight was required, whilst in others it took a month. In one case, a child, aged four, four applications of the paste reduced the tonsils to their natural size. The results were satisfactory without exception in every case. The minimum time required in these cases to remove the tonsil was two weeks, the maximum one month.

Soda cum Calce (London paste) is analogous to the Vienna paste, but possesses many advantages over the caustic. It was first introduced in 1864 by Morell Mackenzie³ after his attention had been drawn to Fournic's work with the Vienna paste, and he employed it with very great success in a large number of cases. It consists of equal parts of caustic soda and hydrated lime mixed with a little alcohol. To this compound Morell Mackenzie gave the name of London paste.

In this mixture we possess a most valuable therapeutic agent, for it possesses many advantages over the potash salt :

1. It causes no inflammatory reaction.
2. It penetrates rather than spreads circumferentially, therefore its application is more localised and the surrounding parts are not affected.
3. Its action is less severe and continues for a much longer time.
4. It causes much less pain—this, however, need not be considered nowadays since the introduction of cocaine.
5. There is no hæmorrhage.
6. There is no rise of temperature, no risks of sepsis, and no bad symptoms ever followed its use.
7. It may be employed in very young children.

¹ *Brit. Med. Journ.*, 1865, ii, p. 636.

² "Étude Pratique sur le Laryngoscope et sur l'application des remèdes topiques d'uns les voies respiratoires," 1863, p. 54.

³ *Med. Mirror*, 1864, i, pp. 465 and 522.

8. The advantage of this paste over other caustics is that it is only necessary to keep it in contact with the hypertrophied tonsil for five seconds.

Morell Mackenzie¹ stated that he pursued this treatment in a great number of cases in his private practice, and it had succeeded far beyond any other remedies of this kind, and shown results which were so perfect that it was impossible for anyone to know that any treatment had been carried out. He cites 40 cases² in which he had employed this treatment, and refers in detail to a number of them varying in age from 3 to 19 years. The cases ranged from acute hypertrophies to chronic enlargement dating from childhood, and included not only tonsils with septic crypts, but also those with constant recurring quinsies. The number of applications required varied from two to eight.

Ruppaner³ (New York) is 1869 referred to 123 patients whom he had treated with London paste; of these 15 were under 6 years of age; 24 under 10 years; 39 under 20 years; 27 under 30 years; and 18 from 30 years upwards. Fifty-eight were simple enlargements of the tonsils free from complications; in 47 the hypertrophy was accompanied by catarrh; in 23 there were symptoms of deafness to a greater or less degree; in 13 speech and voice were affected; in 11 cases deglutition was difficult; 38 cases were complicated with cough; 47 were of a tubercular diathesis. The minimum number of applications of the paste in any case was six, the maximum fourteen.

The length of treatment extended from three weeks to two and a-half months. In none of these cases were there any unfavourable consequences.

Louis Elsberg⁴ (New York), referring to the London paste, says "the tonsil can be removed thoroughly, effectively, and without danger by that application in from three to seven sittings; even a very large tonsil will rarely require more. The pain and soreness by this method are comparatively slight. There is almost no inconvenience attending it when skilfully applied—possibly less than with the galvano-cautery. Over excision it has the great advantage of being entirely free from danger of hæmorrhage.

My attention was first drawn to this treatment fifteen years ago and the favourable results obtained in a number of cases induced me to try it on others. The results in all cases ranging from childhood to advanced age have been most striking and of a very permanent character.

To Prepare the Paste.—A small quantity of equal parts of finely pulverised and well-mixed caustic soda and unslaked lime is kept on hand. This should be kept in a well-stoppered bottle, since caustic soda and lime have a powerful affinity for carbonic acid, and if exposed to the air the causticity of the paste is impaired or lost.

When an application is to be made to the tonsils a little of the powder is placed on a porcelain slab, a few drops of absolute alcohol added and the two carefully mixed with a spatula, when the paste is ready for use.

Care must, moreover, be taken that the paste is of the proper consistency. If too thin it is apt to find its way to parts which ought not to be touched; if too thick or lumpy, the paste will not readily stick and little pieces might be swallowed.

¹ "Diseases of the Throat and Nose," 1880, i, p. 68.

² *Med. Mirror*, 1864, i, pp. 465 and 522.

³ *Med. and Surg. Rep.* (New York), 1869, xxi, p. 313.

⁴ Discussion on Leffert's paper, "The Question of Hæmorrhage after Tonsillectomy," *Arch. Laryngol.*, 1882, iii, p. 81.

Application of the Paste.—It is only necessary to apply the paste for a few seconds, the action of the escharotic upon the tonsil being very rapid. The mucous membrane almost invariably assumes a deep bright red colour followed by streaks and patches of dark blackish blood. The following day the tonsil is covered with a whitish-yellow slough. It should be re-applied after an interval of three or four days and then twice a week. The number of applications varies from two to eight, according to the size of the tonsil and the amount of fibrous tissue present.

This escharotic not only actually destroys in successive layers a portion of the tissue by a process of disintegration, but also devitalises a subjacent layer, causing it to become soft and friable. During the devitalising process the tonsil also undergoes general shrinkage. The largest tonsils have been reduced to normal size, whilst in the case of diseased tonsils there has been no blocking up or sealing up of septic crypts as may occur with the galvano-cautery.

The chief drawback to the employment of this escharotic in the past was the risk of a portion of the paste falling into the larynx, and is the probable cause of this treatment becoming obsolete and forgotten. Morell Mackenzie employed first a rod of glass, a wooden stick or an aluminium

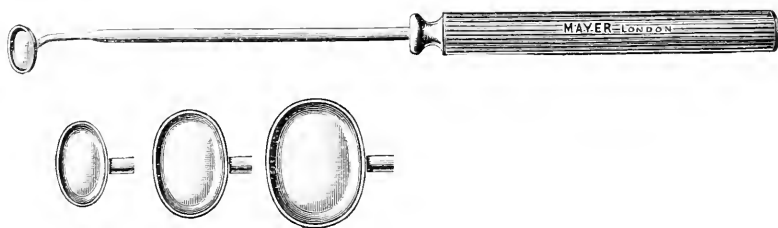


FIG 1.—Irwin Moore's escharotic applicator for the reduction of enlarged tonsils.

wire, whilst later he designed an applicator somewhat on the principle of the guillotine, which, however, was too clumsy, and likely to cause alarm to children or nervous people.

Again, considerable pain was caused by the application of this escharotic. These objections have now been overcome since the introduction of cocaine, and I have devised a special instrument with which the paste may be applied with perfect ease and safety.

This instrument consists of an oval, saucer-shaped receptacle attached to a handle (Fig. 1). With this instrument a greater or less amount of the escharotic can be applied without any risk of any falling off, also contact may be absolutely confined to the part and there is no interference with the adjoining tissues.

It is a consulting-room procedure, devoid of pain or bleeding if performed under the local anæsthesia of cocaine.

That the use of chemical caustics in the treatment of tonsillar disease is by no means obsolete is shown from inquiries made as late as 1909 by George L. Richards¹ (Mass., U.S.A.), who found that amongst 125 laryngologists, 42, or about 33 per cent., still used them to a greater or less extent, amongst these being such well-known authorities as George A. Leland (Boston), Joseph C. Beck (Chicago), D. C. Green, jun.

¹ *Trans. Amer. Laryngol., Rhinol. and Otol. Soc.*, 1909, p. 167.

(Boston), Thomas Hubbard (Toledo), William S. Anderson (Detroit), Dunbar Roy (Atlanta), J. Payson Clark (Boston), Gladson (Philadelphia), Chiari (Vienna), and others.

Otto Freer¹ (Chicago) regards chemical caustics as the resort of the timid manipulator who shuns surgery because he is afraid to attempt it, but, as Richards remarks, "It cannot be said of the above well-known and distinguished operators that they fear the more radical operation."

Though the treatment by this escharotic paste can never be expected to take the place in suitable cases of complete removal of the tonsils by

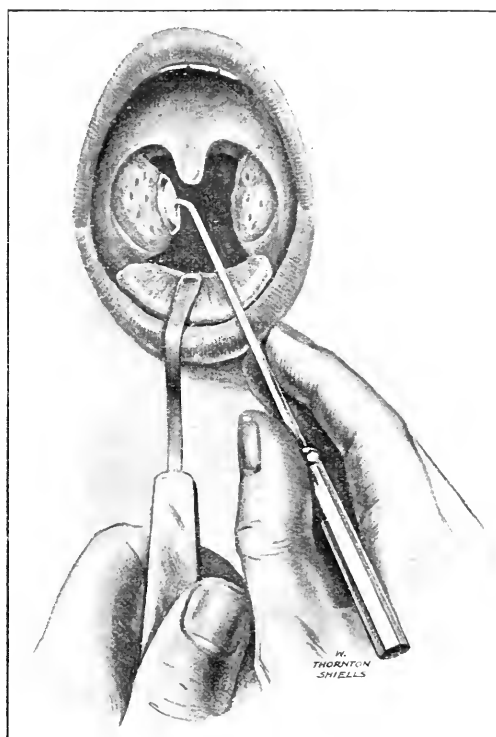


FIG. 2.—Method of applying the caustic paste in the reduction of enlarged tonsils.

operative methods, yet experience has undoubtedly shown that it is a highly effective and valuable alternative in cases so frequently met with where the risks of excision have to be seriously considered, or where the radical operation is refused.

It will be observed that the question of treatment of the accompanying enlarged pharyngeal tonsil has not been dealt with in this communication, yet it is known to co-exist in 50 per cent. of cases. There is no reason, however, why the co-existing adenoid tonsil should not be treated in a similar manner by means of a suitably adapted nasopharyngeal applicator.

¹ Quoted by Richards, *op. cit.*, p. 167.

C. ELECTRICAL.

I. *Electrolysis* has been employed in the past, but is now quite obsolete.

Solis-Cohen¹ says in a few instances of soft enlargements of moderate dimensions where the patients refused to submit to operative procedure he has succeeded in reducing the glands by electrolysis, employing a long platinum or gold needle, with an isolated handle, in connection with the negative pole of a battery, the positive pole being in connection with a sponge electrode held outside over the tonsil, or in some instances upon the surface of the gland in the mouth. A number of applications, ten to twenty each day, are necessary for the accomplishment of this purpose; and in some of these cases the results were not worth the trouble of the performance.

II. *Galvano-cautery or Galvano-puncture*.—This was a method in great favour twenty years ago in those cases in which the removal of the tonsils was contra-indicated, *e.g.* in adults, or where hæmorrhage was likely to occur.

It was once the rage just as enucleation has become so at the present day, but after being much abused by the amateur specialist it fell into disrepute and is now rarely employed for this purpose.

Advantages:

1. If properly employed it causes no pain or inflammatory reaction.
2. Ease with which it may be applied.
3. Its innocuousness.
4. The possibility of graduating the atrophy.
5. Its applicability to cases in which surgical operation is contra-indicated.

6. The absence of any complications observed sometimes after removal of the tonsils, *e.g.* sepsis, hæmorrhage, etc.

Semon² employed galvano-cautery in certain cases, particularly in adults with hard fibrous tonsils, when it was necessary to reduce them, and where surgical removal could not be recommended.

Havilland Hall³ also used this method, and refers to the case of a fat, flabby lady, aged forty, of an anæmic type, who had huge tonsils which were greatly reduced by this treatment. It occupied six weeks, with a second course the following year. When seen five years later "there was not a vestige of a tonsil" visible. He considers that "the cautery is of great advantage in those cases getting on in years, and in whom there is a liability to serious hæmorrhage."

Watson Williams⁴ considers that "in patients in whom the radical operation is contra-indicated cauterising is very efficient." In the reduction of very large tonsils at least five weeks is required; in slight cases atrophy was obtained in two or three weeks.

Kelson⁵ refers to the power possessed by the galvano-cautery of causing absorption out of proportion to what one would expect from the slow separating or from cicatricial contraction.

Fitzgerald Powell⁶ has described this method of reduction as a very useful one when, for various reasons, operations were not desirable.

¹ "Diseases of the Throat," 1872, p. 132.

² Discussion on Tilley's case. *Proc. Roy. Soc. Med.*, 1913, v (Sect. Laryngol.), p. 31.

³ *Loc. cit.*, p. 31.

⁴ *Loc. cit.*, p. 32, also *Med. Ann.*, 1890, p. 483.

⁵ *Loc. cit.*, p. 32.

⁶ *Loc. cit.*, p. 32.

Tilley¹ mentions the case of a male, aged sixty-eight, whose left tonsil was so swollen that it almost touched the right fauces and extended downwards below the level of the epiglottis. He punctured it deeply in three places with the galvano-cautery and an extraordinary reduction in size took place during the following three weeks. Similar treatment was applied later on three or four occasions and the gland almost entirely disappeared.

He refers to the rapid absorptive power which the galvano-cautery institutes in the tonsil—and replacement by a similar fibrous mass—rather than an actual destruction of its tissue. He exhibited this case at the Section of Laryngology, Royal Society of Medicine, to show the possibility of obtaining almost total abolition of the tonsils by measures simpler than radical surgical procedures.

The author² has also referred to his experience of the galvano-cautery as most satisfactory in suitable cases. No inflammatory reaction occurs and no pain is felt by the patient if the tonsil is painted with cocaine. It is a consulting-room procedure and patients need only attend once a week for five or six weeks. He has employed it in young children from eight years upwards without much difficulty after first obtaining their confidence.

Dan McKenzie³ refers to a class of case (to which Mr. Tilley's case belonged) in which the galvano-cautery was the proper treatment for the reduction of the tonsils.

Valat⁴ (Paris) deals with the treatment of enlarged tonsils by galvano-puncture, and advises that the finest thermo-cautery point (about 2 mm.) should be applied and be embedded in the tonsil about half a centimeter and three or four cauterisations are practised at one sitting, each distant from the other by some millimetres. This prevents formation of a slough and painful ulcers. The heated point should be left buried in the tonsil for one or two seconds. The operation is repeated twice a week.

Tussaud⁵ (Paris) also advocates the galvano-cautery, and he passes the electrode not only through the diseased tissues, but also into the surrounding comparatively healthy tissue, thus preventing absorption by forming a barrier of sclerotic tissue.

Vittoria Grazi⁶ has used the galvano-cautery in the treatment of hypertrophy of the tonsils and chronic follicular tonsillitis, and refers to the excellent results he has obtained and recommends it to the profession. He does not think that it has received the attention which it deserves.

Method of Employing the Galvano-cautery.—In the reduction of the hypertrophied tonsil by the galvano-cautery the punctures should be made by means of a pointed platinum electrode, passed if possible between the crypts and not directly into them. It should be held there for a few seconds and then withdrawn, to be re-inserted again in another portion of the tonsil. A dull-red heat is indispensable so as to avoid producing hæmorrhage. Five or six punctures may be made at a sitting without danger of creating too much reactionary inflammation. If the cautery point is passed into a crypt, in cases of chronic follicular tonsil-

¹ Discussion on Tilley's case, *Proc. Roy. Soc. Med.*, 1913, v (Sect. Laryngol.), p. 51.

² *Op. cit.*, p. 33.

³ *Op. cit.*, p. 33.

⁴ *Gaz. des Hôp.*, November 17, 1888.

⁵ *Lyon Méd.*, April 22, 1894. Cited by Watson Williams, *Med. Ann.*, 1895, p. 749.

⁶ Cited by Watson Williams, *Med. Ann.*, 1893, p. 509.

litis where the crypts are septic, it should be pushed deeply to the bottom of the canal and held there long enough to destroy the lining membrane, or else the destruction of only the upper portion of the crypt may cause blocking up of the passage through inflammatory adhesion, so that suppuration is induced and septic accumulations locked up, resulting in considerable inflammation of the deeper tissues of the tonsil. Some advise, after the cautery point insertions, that a flat cautery electrode or the needle curved to adapt itself to the tonsil should be passed over the surface of the tonsil and several furrows drawn. There is little or no after-pain. The slough is cast off during the following week or ten days, and the tonsil reaches its maximum of shrinkage in about four weeks.

Cauterised areas are not absorptive, for the cautery causes a defensive inflammatory reaction followed by exudation of leucocytes around the cautery tracks which prevents the entrance of micro-organisms such as may result from or develop upon the slough.

There is no question of doubt that if properly used galvano-cautery may be employed to great advantage in certain cases, particularly in adults with hard fibrous tonsils.

As previously stated, the writer has frequently employed it with great success in such cases.

III. *Röntgen rays*.—W. Stewart¹ (X-ray Department, Queen's Hospital, Birmingham) reports in 1913 that he had investigated the possibility of reducing the size of enlarged tonsils and adenoids by means of the X rays just as they will reduce the size of chronically inflamed lymphatic glands. He has treated a number of cases with success by passing the rays laterally in front of the vertebræ and post-pharyngeal wall, two or three doses giving relief to the symptoms. He came to the following conclusions:

1. All the pharyngeal lymphoid tissue can be subjected to the influence of the X rays.

2. Diminution in size of the tonsils and adenoids occurs—depending on the length of time of the inflammation or on the amount of fibrous tissue formed.

3. Dissipation of obstructive symptoms.

4. Septic conditions are relieved.

IV. *Diathermic Puncture*.—The tonsils can be destroyed by means of heat passed through them from a high-frequency current. It has been applied with satisfactory results in septic tonsils, whilst enlarged tonsils have been destroyed in adults, leaving intact the faucial pillars and a smooth scar. It is probable that this method will be more extensively employed in the future, since it causes no hæmorrhage.

Cumberbatch² states that the advantage of diathermic puncture compared with the galvano-cautery is that in the former a cold instrument is employed, and the spread of the heat, which is considerable, can be regulated by varying the strength of the current, and the tissues can be treated to a degree just sufficient to coagulate them.

It has been employed in this country by Harmer,³ Norman Paterson,⁴ and Dan McKenzie⁵ with satisfactory results.

¹ *Brit. Med. Journ.*, 1913, i, p. 1157.

² "Surgical Diathermy," *Proc. Roy. Soc. Med.*, 1918, xi (Sect. Electro-Ther.), pp. 37-38.

³ *Proc. Roy. Soc. Med.*, 1912 (Sect. Laryngol.), p. 145. *Op. cit.*, 1911, iv (Sect. Electro-Ther.), p. 8.

⁴ Discussion on E. P. Cumberbatch's paper, "Surgical Diathermy," *op. cit.*, p. 44.

⁵ Discussion on E. P. Cumberbatch's paper, *op. cit.*, p. 46.

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SOCIETIES' PROCEEDINGS.

ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

February 1, 1918.

President: DR. A. BROWN KELLY.

(Continued from p. 348.)

Shrapnel Wound of the Left Side of the Face.—G. S. Hett.—Rifleman T. H.—, aged thirty-two. Wounded May 27, 1917. Admitted July 11, 1917. Transferred to Queen's Hospital, August 21, 1917. Shrapnel wound left side of face. Left half of nose absent. Antrum open on face. Opening from floor of antrum through gingivo-labial fold.

Operation: The opening between the antral cavity and the mouth was closed by raising the antral mucous membrane round the opening and closing the edges by silkworm gut sutures. The upper lid was everted, and the mucous membrane of the alveolus and inner surface of upper lip was also sutured together by horsehair sutures. The left inferior turbinal was detached posteriorly, twisted forwards, and its posterior end attached to the anterior portion of the floor of the nose so as to form a support for a subsequent plastic operation on the nose. The right ala nasi was adherent to the septum by adhesions. The ala was partly detached below and the adhesions removed and a tube inserted into the right nasal cavity, thus establishing the patency of the right nasal passage.

Sunken-in Nose, illustrating the Employment of an Autogenous Costal Cartilage Graft for Septal Support—G. S. Hett.—Private C—. This patient received damage to the face from a kick of a horse while serving in France. As a result of this the septal support of the nose sloughed. The nasal bones remained. As a result of the injury the nose drooped and fell in from the middle of the bridge to the tip, causing a marked prize-fighter type of face. It was found on examination that the whole of the septal cartilage and part of the vomer were missing, and the soft parts of the septum had healed and were intact.

Operation: An incision was made down the mid-line of the columella from the tip of the nose down to the junction of the columella with the upper lip. This was deepened, and the soft tissues of the septum were separated backwards until the remains of the vomer were met with. The division was continued upwards and forwards under the skin of the bridge and tip. The two sides were separated down to the floor of the nose in the same manner. By proceeding carefully it was possible to complete the separation without making a perforation. Meanwhile Captain Aymard had exposed the eighth costal cartilage on the right side. A quadrilateral piece of cartilage rather larger than the normal cartilage of the septum, and about the same thickness, was removed and cut into shape to fit tightly between the septal flaps. The usual sub-mucous resection plugs were then inserted and kept for twenty-four hours.

Post-traumatic Laryngeal Stenosis treated by Homologous Cartilage Graft—G. S. Hett.—Private R— was admitted to Hospital suffering from loss of voice and stridor. The patient had a high tracheotomy wound. He was wearing a tracheotomy tube, but even with this he had some stridor, especially at night. He had a history of having taken poison by mistake, and then cutting his throat in desperation. An emergency tracheotomy had been done, and it had not been possible to dispense with the tube six months after the date when first seen (October 23, 1917). The tracheotomy wound had touched the lower border of the thyroid cartilage, traversed the cricothyroid membrane, the cricoid cartilage, and first ring of the trachea.

Operation: A low tracheotomy was done. The upper tracheotomy wound was opened and very marked stenosis was found. This was due to the fact that the anterior wall of the respiratory passage in this situation consisted of nothing but scar-tissue. There was a very narrow chink between the lower border of the thyroid and the cricoid. The narrowed passage was blocked above the tracheotomy opening by polypi. The polypi were removed, scar-tissue dissected away, and an indiarubber tube inserted well up into the larynx and down into the trachea.

The patient managed without the low tracheotomy tube for a time, but it had to be reinserted at intervals. After another month it was found impossible to retain the lumen of the passage owing to contraction and want of support of the anterior wall. A plastic operation was therefore decided on.

Second operation: The thyroid cartilage was exposed. The flap had its base on the right, and was turned across the neck to the side. The scar of the cut throat, which lay above the flap, was excised. The thyroid cartilage was split, and some scar-tissue at its lower border was excised. The cords and rest of the larynx were normal. The scar-tissue over the cricoid and tracheal region was freely cut away. Dr. Butterfield had meanwhile exposed the larynx and upper part of the trachea of a

dog in the annexe to the operating theatre. He excised and brought me the portion after washing it in normal saline solution. I had intended to use the dog's thyroid cartilage, but found that the anterior half of the trachea fitted better into the gap. The graft contained five rings of cartilage. The mucous membrane of the inner surface was retained. The graft was sutured by catgut into position, and the infrahyoid muscles were detached above and wrapped round it. Lastly, the skin-flap was slid downwards and formed a covering to the whole.

The patient did well; the low tracheotomy was allowed to close on the fourth day. Subsequently two half rings of the graft appeared on the surface in a local abscess and were removed. The wound then healed, and the patient had a good airway, lost his stridor, and developed a deep voice, whereas before he only had a hoarse whisper.

Four months later he was brought into the hospital with acute abdominal symptoms. He died in a few hours. At the *post mortem* the cause of death was found to be a strangulated diaphragmatic hernia.

This case is interesting as showing that the homologous graft persisted and formed a support and new anterior wall to the trachea. The specimen is shown, and also a microscopic section by Dr. Butterfield, through the region of the homologous graft. The microscopic sections were taken from a small thin piece removed from the left side of the median incision. These show small islands of cartilage, some of which are in intimate relationship to the lower end of the thyroid cartilage. These contain practically all the characters of normal cartilage, except that there is some fibrillation of the matrix.

Rhinoplastic Case.—J. L. Aymard.—There is complete loss of nose, right eye, and partial loss of upper lip, following a gunshot wound. The case presents many of the difficulties attendant upon nasal reconstruction.

Dr. AYMARD: A paper of mine on "Some Points in the Anatomy of the Septum" has been reprinted in the JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY for this month, and I hoped to demonstrate the circulation in the cartilage of the septum I have here. It requires to be taken out of the spirit ten minutes, and then returned to the spirit, and removed; it will then show all the ramifications of the vascular system in the septal cartilage, which is only a prelude to the general circulation in the cartilage. I stated that operators often thought they had performed a subperichondrial resection, whereas what was done was only a submucous resection.

Turbinal Shifts and Septal Swings.—G. S. Hett.—By the former I mean advancement of the middle, or inferior turbinals, and have found this manœuvre of great use in gunshot wounds of the nose, in helping to fill up gaps, in acting as supporting structure to a new nose, or portion of a nose, which has to be made. They also help to form a new mucous lining for the new nasal cavity.

CASE 1.—Private F—. This case illustrates the advancement of the right middle turbinal.

CASE 2: *Septal Swing*.—Lieutenant S—. This shows a somewhat complicated mass of turbinals brought forward to help fill up the gap, in a case of Major Gillies', of total loss of the nose. (This case has already been shown by Major Gillies, *re* Rhinoplasty.) The diagram explains the shift of all four turbinals and in addition the upper septal swing.

In this case the detached septum was swung literally at Major Gillies' suggestion to try to compensate to some extent for the loss of the nasal process of the left superior maxilla.

CASE 3.—Private M——. A combined case of Major Gillies' and my own, where an L-shaped septal swing was used to form a support for the bridge of the nose and tip of the new nose.

CASE 4: *Nasal Supports*—Private C——. This illustrates the method of septal support by making a new cartilaginous septum. This method is only applicable where the soft tissues remain, but may have a very useful application in cases of sunken bridge in civil as well as military cases.

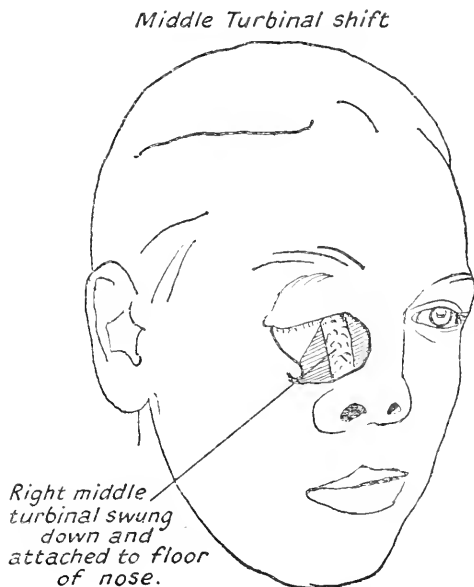


FIG. 1 (Case 1).

CASE 5.—Private B——. This illustrates the same condition. The nose was held down by a scarred right ala, so that the latter had to be cut free before the tip could be advanced. In cases where septal support is needed but the soft tissues of the septum are lacking, two pieces of cartilage are introduced, one along the bridge through a tenotomy wound and the other by splitting the columella as in Lieut. Hastings' case.

CASE 6.—Private H——. In this case I used a modified septal swing to form a new columella, and later implanted an L-shaped piece of cartilage to give prominence to the bridge, and support the columella.

CASE 7.—Private C——. In cases of bringing down a nose from the forehead, the supports for the bridge, columella and ala are usually planted in the nose before bringing down. The most difficult problem in my mind in rhinoplasty is to get sufficient prominence for the tip, so that all additional means are useful. In the case now shown I have arranged several accessory supports which I trust may be added safeguards. At the time of the implantation of the cartilage in the forehead

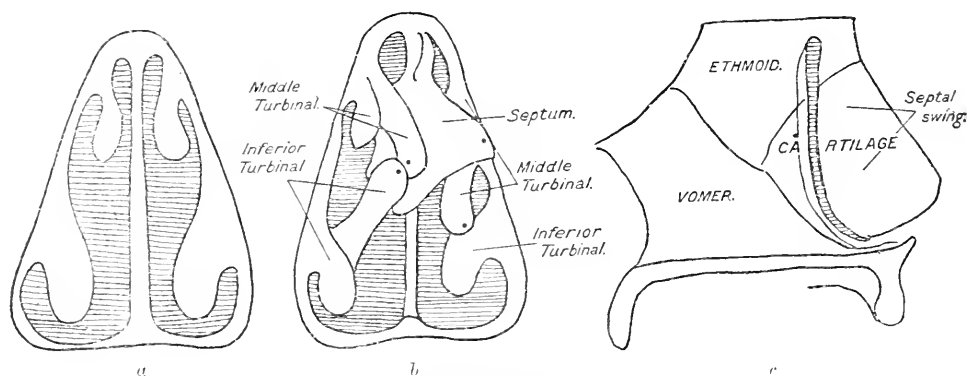


FIG. 2 (Case 2).

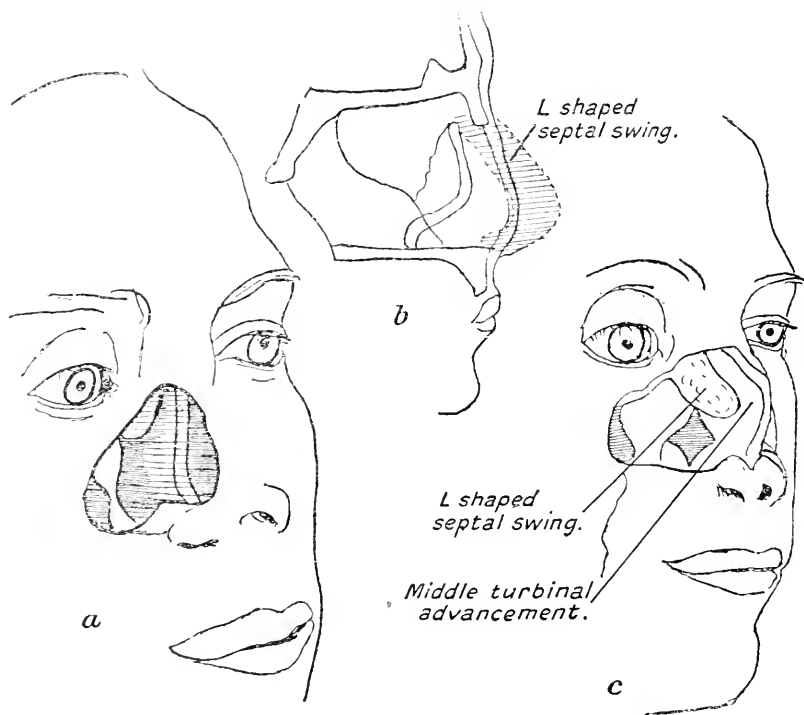


FIG. 3 (Case 3).

I buried two rods of cartilage under the mucous membrane of the floor of the nose. They are now living and have a mucous membrane covering. When bringing down the nose I intend to swing them forwards and join their raw surfaces together and so have a median mucous membrane covered rod to act as a prop and replace the original septum. I have

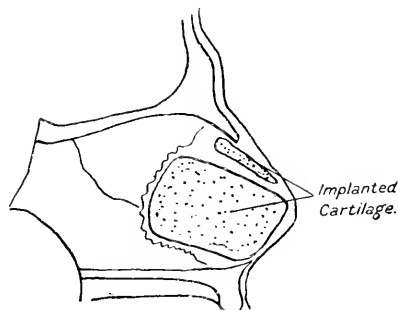


FIG. 4 (Case 4).

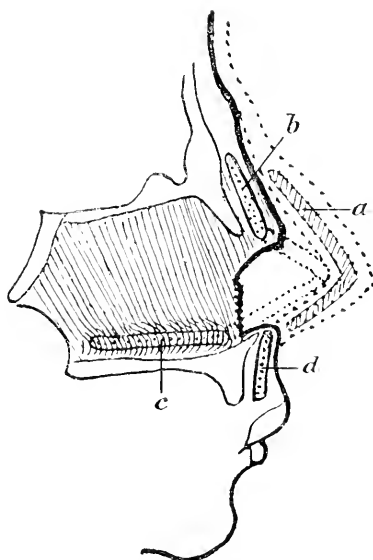


FIG. 5 (Case 7).—Cartilage grafts: *a*, in forehead flap; *b*, in bridge of nose; *c*, in floor of nose; *d*, to form nasal spine.

also endeavoured to make a new nasal spine. In making a new nose, besides the tendency of the tip to sink, there is the bad appearance of the upper lip, and its junction with the columella. This is due to the frequency with which the nasal spine and crest are lost. I endeavoured to replace this with a new cartilaginous spine introduced through the mucous membrane of the upper lip. The forehead columella is to be attached directly to this and the cartilages joined. Further, I have

placed a rod of cartilage under the skin of the bridge, which can also be swung downwards in order to form a still further support for the bridge and tip.

THE MAKING OF A NEW ALA.

Where one ala is destroyed, a vertical flap from the junction of the nose and cheek may be turned down to form a new ala. This is a simple method, but unless the ala is supported and the raw surface of the new vestibule is covered with epithelium, it will inevitably shrink, so that the contour of the ala is destroyed and nasal obstruction ensues. In order to obviate this contraction in one case (Private H—, No. 8), where the right ala had been destroyed together with the anterior end of the right inferior turbinal, I removed the anterior half of the left inferior turbinal and used this as a free gift to support the right ala.

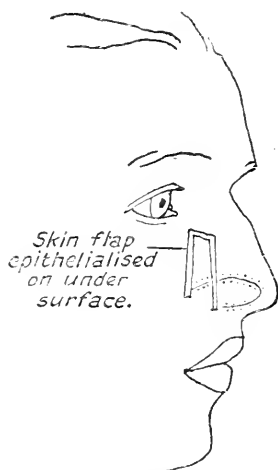


FIG. 6 (Case 9).



FIG. 7 (Case 10).



FIG. 8 (Case 11).

The turbinal was implanted in the position of the right ala. It established a living connection with the tissues. A fortnight afterwards the mucous membrane from its superficial surface was removed and the usual skin-flap was brought down to cover it. In this case, therefore, the right vestibule was lined with mucous membrane instead of skin. A serviceable but somewhat rigid ala was produced. In subsequent cases where possible, I have turned down a semilunar flap of skin previously epithelialised on its under surface by Ewer's method (Private W—, No. 9).

A useful amplification of this method is to include a piece of cartilage between the skin lining of the vestibule and the external flap. Where alæ, tip and columella have to be made (Private R—, No. 10), I have found the Y-shaped flap of service. The flap must be cut thick, especially over the tip and columella, as otherwise the tip will contract and not be sufficiently prominent.

The result of the operation for restoration of ala, tip and columella was satisfactory but the left vestibule became somewhat contracted. In order to obviate this I employed the following manœuvre: A Stent was

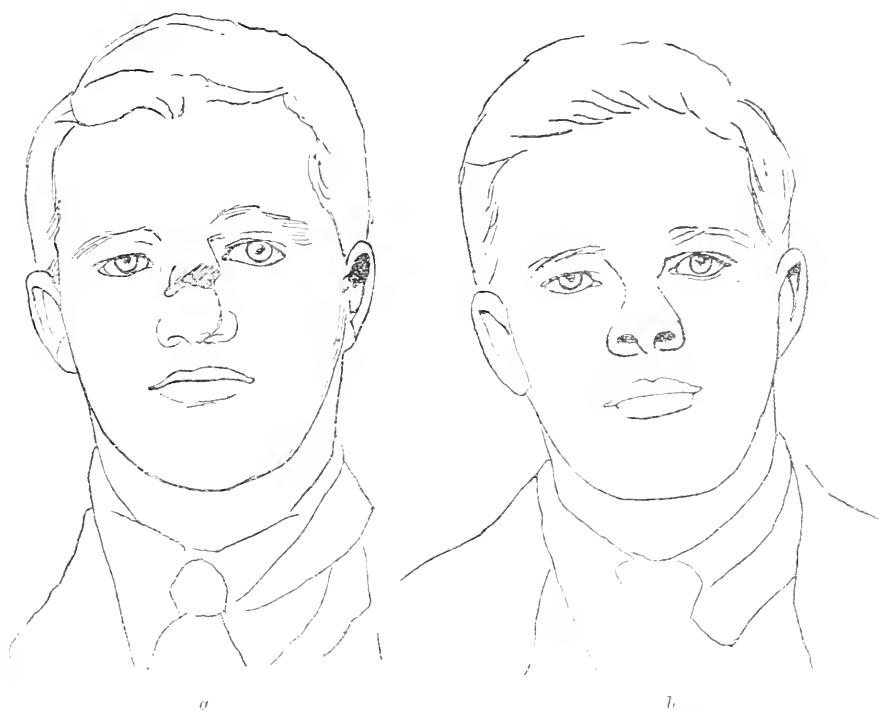


FIG. 9 (Case 14).—*a*, Front view before operation; *b*, front view after operation.

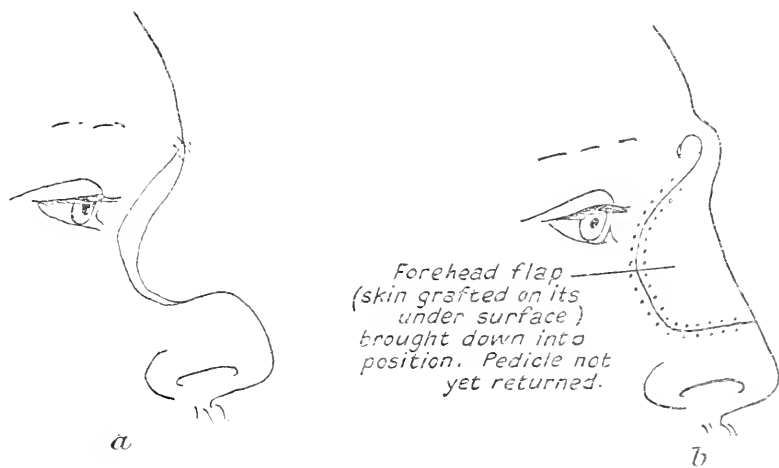


FIG. 10 (Case 15).—Side view.

moulded round an india-rubber tube. The contracted skin and scar-tissue of the vestibule were dissected away and the Stent introduced while still soft, so that it formed an exact impression of the cavity. When cooled and hardened it was removed and covered with Thiersch skin-graft. It was then re-introduced and stitched firmly into position. The drainage-tube, which was passed through it, allowed free vent of mucus from the nose. Eight days afterwards the Stent was removed and the vestibule was found to be lined with healthy epithelium. This established a patent nostril and has prevented subsequent contraction.

THE PUG-NOSE TYPE.

In cases where the lower portion of the nasal support—*e. g.* the septum, has been destroyed, the alæ and tip tend to sink in and take up the vertical position (Private C—, No. 11). In these cases where possible the lower septal swing is adopted and the tip and alæ are brought down from the vertical to the horizontal. A new nose is then brought down from the forehead and either joined to the tip and alæ in their new position or placed over the tip and alæ, the latter surface having been previously rawed. In another case (Private R—, No. 12) the new nose was merely brought down and joined to the alæ and tip, whereas in the last case the alæ and tip were overlapped by the new nose.

THE BIRD BEAK TYPE.

In these cases the upper portion of the nasal support, *i. e.* the nasal bones, have been damaged or destroyed. In the first case of this type shown (Private C—, No. 13) the external wound had closed but there was considerable nasal obstruction. Intranasal adhesions were removed and a submucous resection was performed, which was carried far forwards so as to depress the tip. The removed cartilage was cut into four strips and these were introduced superimposed through a tenotomy opening so as to elevate the bridge.

In the next similar case (Private S—, No. 14) the upper portions of the nasal cavities were open on the surface. The middle turbinals were advanced so as to fill up the gap, and one vertical and two lateral flaps, as shown in the diagram, were used as a skin covering. In this case also there was considerable nasal obstruction. At a subsequent operation a month later the intranasal adhesions were cleared and a submucous resection was performed. The removed piece of cartilage was reinserted, with its long axis vertical so as to form a support for the upper portion of the bridge of the nose. A very fair result was obtained but the nose remained somewhat tip-tilted. The patient then came under Major Waldron, the head of the Canadian section at Sidcup. In order to improve the appearance still further we introduced a rod of cartilage from the eighth rib under the skin of the bridge.

A third case of the same kind (Private H—, No. 15): Three pieces of cartilage have been introduced into the forehead—one to give prominence to the bridge, and two lateral ones to reproduce the nasal bones. After epithelialisation of the under-surface of the forehead flap the latter has been brought down into position.

(*Note by Editor, JOURN. OF LARYNGOL., RHINOL. AND OTOL.* — A number of the diagrams have been unavoidably omitted. Readers interested are referred to the *Proceedings of the Royal Society of Medicine, Laryngological Section, February, 1918.*)

(*To be continued.*)

ABSTRACTS.

Abstracts Editor—W. DOUGLAS HARMER, 9, Park Crescent, London, W. 1.

Authors of Original Communications on Oto-laryngology in other Journals are invited to send a copy, or two reprints, to the JOURNAL OF LARYNGOLOGY. If they are willing, at the same time, to submit their own abstract (in English, French, Italian or German) it will be welcomed.

NOSE.

Ozæna.—Matthew S. Ersner. "The Laryngoscope," January, 1919, p. 22.

Ersner has prepared a polyvalent vaccine consisting of eleven strains of the Friedländer organism. (He discontinued the search for the coccobacillus of Perez, Hofer and Koffer.) The results obtained with Friedländer vaccines were gratifying but not entirely satisfactory, for the improvement was only temporary. Schatz and Ersner treated sixteen patients. Nine patients responded to treatment, one made a complete recovery, another was symptomatically cured, seven recurred, and the remaining seven did not respond to treatment. In only two smears did Ersner find the acid-fast organism (tubercle bacillus?) described by Dan McKenzie. Ersner holds that we cannot lay much stress upon the acid-resisting organisms found, because the crusts present in the nasal chambers are very good breeding-places for the saprophytic organisms. Only two "Wassermanns" of the sixteen were positive, and these belonged to the group that did not respond to the vaccine.

Ersner thought that ozæna might be due to some food dyscrasia. The following proteids were therefore employed: casein, egg, beef, mutton, pork, fish, oysters, wheat, oatmeal, rice, barley, tomato and strawberries. The protein was extracted by the use of a weak alkali, and after shaking and incubating was filtered. Absolute alcohol was then added, and the solution evaporated in a water-bath. A saturated solution of the dry material was made in an alkalised sodium chloride solution. The endermic method of injecting the proteins was employed. All ozæna cases were, however, negative. *J. S. Fraser.*

Ozæna Vaccines.—Harry A. Schatz. "The Laryngoscope," January, 1919, p. 17.

Schatz has employed the inoculation method of Hofer as described by Guggenheim. The rabbits failed to develop nasal symptoms, nor did any die except after weeks of illness and emaciation. Those that died exhibited no pathological intranasal condition, nor did Schatz obtain the Perez organism from the heart's blood. As readers of the JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY know, McGowan has expressed the view that the rabbits employed by Hofer and others may have been suffering from distemper, hence these observers obtained cultures of the *Bacillus bronchisepticus*—an organism resembling the coccobacillus of Perez in almost every particular. Horn, who began vaccine work with Hofer's cultures, obtained poor or indifferent results in his earlier efforts. Murray and Larson had similar experiences. Horn has expressed agreement with Perez that the *Bacillus fetidus ozæniæ*, or "*B. rhinosepticus*," is the primary ætiologic factor, while the *B. Friedländer* is a secondary invader. The *B. rhinosepticus* gives improvement in all cases, but cures are rare. *J. S. Fraser.*

Parosmia.—William H. Dudley. "The Laryngoscope." March, 1919, p. 156.

Dudley states that any physical disturbance of any of the nerves of special sense does not result in pain, as does a like disturbance of a nerve of ordinary sensation, but instead in a perversion of the usual function, and this of a disagreeable nature. When abnormal odours fasten themselves on our organ of smell, some disturbance in some portion of the olfactory apparatus must have taken place. Cases of parosmia may be divided into two classes: (1) The endogenous, in which the disturbance may be caused by a reflex from an inflammatory state of some neighbouring organ, inflammation of the olfactory nerve itself, pressure on, or destruction of, the olfactory nerve or its cerebral centre, or disturbance of nutrition of the nerve as in arterio-sclerosis. (2) The exogenous form is rare. It appears to consist of some quite vigorous impression by a decidedly penetrating odour upon the olfactory nerve in an especially susceptible individual. Robertson has reported the case of a woman, aged fifty, who one week after an operation for cataract suffered from iridochoroiditis. One morning she complained that she was suffering from a most intolerable noisome stench. It was worse than all conceivable bad odours combined in one. Robertson regarded it as a subjective sensation referable to a reflex excitation of the olfactory nerve, aroused by irritation of the ciliary nerves consequent upon the inflammation. A hypodermic of morphia put the patient to sleep, and when she awoke the smell was gone. Wood has reported a glioma of the frontal lobe and olfactory bulbs with hallucinations of smell. As an epileptic aura parosmia is occasionally met with, but among the insane and hysterical it is quite rare. Campbell Thompson relates a case, one of the annoying symptoms of which was an unpleasant smell. Autopsy revealed a large abscess in the fore-part of the temporo-sphenoidal lobe—the cerebral centre for olfaction.

J. S. Fraser.

LARYNX.

Ankylosis of the Crico-arytænoid Joint.—Thomas J. Harris. "The Laryngoscope," March, 1919, p. 139.

Harris states that ankylosis of the crico-arytænoid joint is a more common affection than is generally supposed. In its acute form it is often overlooked, and in the chronic form is often mistaken for recurrent nerve paralysis. Bilateral ankylosis is a far rarer occurrence, and, if the cords are fixed in the median line, is fraught with grave consequences to the life of the patient.

Female, aged fifty-four. Hoarseness for nine months. Later and very gradually she began to have some difficulty in breathing. Examination showed the left vocal cord motionless and in the median line. The arytænoid cartilages and the arytaeno-epiglottic fold on both sides and the false cords were distinctly swollen. The right vocal cord also showed impaired movement. On account of the possibilities of an acute oedema the patient was advised to come into the hospital. A high tracheotomy under local anæsthesia was performed. Blood and spinal fluid gave a negative Wassermann; X-ray of the chest showed no neoplasm or aneurysm. X-rays of the teeth showed a dental abscess; extraction of the diseased tooth followed. The patient complained of an acute arthritis involving the knee-joints, which soon subsided. It was determined to attempt gradual dilatation by means of specially

constructed intubation tubes, but without success. Removal of one or both cords was taken under careful consideration, but decided against in view of the laryngoscopic picture which had now showed itself. Both cords were seen lying in the median line with only a narrow slit between them. So far the causation of the bilateral lesion has not been cleared up.

J. S. Fraser.

Early Training of Defective Speech.—Mary Summers Steel. "The Laryngoscope," March, 1919, p. 160.

The majority of the cases in the "defective speech" clinic are sent from the schools, but the best time for correction of the defects would be before the child is embarrassed by the inability to speak correctly. In the home life members of the family learn to understand the imperfect attempts to put thoughts into language. If strangers arrive these children retire to the background. They later become absorbed in silent reading and so learn to think faster than they can produce the words. When the time comes for school little attempt is made by their teachers to understand articulation which deviates from the normal, or to be patient with the stammerer. Good speech is the result of the co-ordination of the peripheral with the central speech mechanism, and each case must be carefully studied to ascertain which of these mechanisms is not performing its functions.

J. S. Fraser.

EAR.

The Bárány Tests in Pathologic Cases.—Lewis Fisher. "The Laryngoscope," October, 1918, p. 724.

This paper is of great interest and importance. The first question in any given case is whether we are dealing with a functional or an organic condition. If all responses to ear-stimulation are perfectly normal a functional condition may be suspected. A definite impairment of even one response shows that we are dealing with an organic lesion. Our next problem is to determine whether the case is one of peripheral or central lesion. Many cases of cerebellar lesion or tumours of the cerebello-pontine angle present symptoms similar to those observed in an affection of the labyrinth and *vice versa*. In a peripheral lesion *all* the responses are impaired, and conversely the presence of any *one normal* response to stimulation indicates a normal labyrinth and eighth nerve. If the findings lead to the conclusion that the lesion is central the simplest method of procedure is that of elimination. We begin with the labyrinth and proceed brainward, considering each structure by itself. (1) With good hearing and one or more normal responses from the static-kinetic portion of the labyrinth, the labyrinth itself and eighth nerve are to be considered uninvolved. (2) For information relative to the condition of the medulla oblongata and *inferior* cerebellar peduncles we examine the responses obtained on stimulation of each horizontal canal *separately*. This test is performed by tilting the head back sixty degrees after douching. If this produces normal horizontal nystagmus and vertigo with past-pointing and falling, the medulla oblongata and inferior cerebellar peduncle of that side may be considered uninvolved. (3) To determine the integrity of the pons we examine the responses obtained from stimulating the vertical semicircular canals. These are tested when the ear is douched with the head thirty degrees forward—the so-called

"upright" position. If a normal rotary nystagmus results with vertigo, past-pointing and falling, it suggests uninvolved pathways in the pons and middle cerebellar peduncle of the side douched. (4) The cerebellum is considered as not the seat of any gross lesion, if stimulation of either ear or any canal produces past-pointing of both arms in both directions. (5) When the tests of *all* the semicircular canals of both sides produce impaired or absent vertigo, it is reasonable to suppose that there is *one* lesion located at a point where *all* the fibres concerned in vestibular vertigo come together, *i.e.* the decussation of the superior cerebellar peduncles. (6) With no responses at all from the right ear and an absence of response from the vertical canals of the left ear, it is reasonable to explain the whole "phenomenon-complex" by one lesion in the right cerebello-pontine angle, where an involvement of the right eighth nerve would produce no response from the right labyrinth, and by pressure against the brain-stem would interfere with the responses from the vertical canals of the opposite side.

Examples.—(a) If stimulation of the right ear produces no nystagmus, vertigo, past-pointing or falling, there is obviously a destruction of the labyrinth or eighth nerve. We would, of course, have complete deafness of this ear. (b) Stimulation of the right horizontal canal produces—nystagmus, none; vertigo, normal; past-pointing, normal; falling, normal; this suggests a lesion in the medulla oblongata between Deiters' nucleus and the posterior longitudinal bundle on the right side. (c) When stimulation of the right horizontal canal produces—nystagmus, normal; vertigo, none; past-pointing, none; falling, none, it suggests a lesion of the right inferior cerebellar peduncle. (d) When stimulation of the right vertical canal produces—nystagmus, none; vertigo, normal; past-pointing, normal; falling, normal, it suggests a lesion in the posterior portion of the pons near the posterior longitudinal bundle on the right side. (e) When stimulation of the right vertical canal produces—nystagmus, normal; vertigo, none; past-pointing, none; falling, none, it suggests a lesion of the right cerebellar peduncle. (f) When stimulation of *all* canals of *both* ears produces—nystagmus, none; vertigo, normal; past-pointing, normal; falling, normal, it suggests a lesion of the posterior longitudinal bundles themselves. (g) When stimulation of *all* canals on the right side produces—nystagmus, normal; vertigo, none; past-pointing, none; falling, none, it suggests a lesion of the cerebellar vestibular nuclei of the right side. (h) When stimulation of *all* the semicircular canals of *both* ears produces—nystagmus, normal; vertigo, none; past-pointing, none; falling, none, it suggests a lesion at the base of the cerebral crura at the point of decussation of the two superior cerebellar peduncles. (i) When right ear is totally deaf and stimulation of its semicircular canals produces—nystagmus, none; vertigo, none; past-pointing, none; falling, none; and stimulation of the left horizontal semicircular canal produces the only normal reactions on that side, the lesion is located in the right cerebello-pontine angle.

Fisher admits that, when confronted with actual pathologic cases of intracranial involvement, the findings may be obscured by pressure-phenomena.

J. S. Fraser.

Tests for Malingering.—Kerrison. "The Laryngoscope," September, 1918, p. 662.

Kerrison states that there has been some evidence that a certain number of malingerers have been previously coached as to the tests to

be employed and the reactions which should be assumed. It is important in dealing with suspected malingerers to give no hint that they are in any way under suspicion. The most glaring evidences of deception should pass without comment until the examination is completed. Complete bilateral deafness is rarely, if ever, claimed. Two types of unilateral deafness are assumed, *i.e.* (1) deafness advanced, but not complete; and (2) absolute deafness.

Method: Only one registrant (recruit) at a time is admitted to the room. Preliminary testing of the sound ear is essential to a proper interpretation of tests to be applied later. *Weber's test:* Apply a vibrating tuning-fork (C256) to the vertex of his skull. If he refers the sound to his supposedly deaf ear, Kerrison is favourably impressed as to his probable honesty. *Loud voice test:* The eyes are now blindfolded and the recruit closes with his finger his better ear. The examiner repeats words and numbers to him at first in low voice and then in progressively louder and louder tones. If, when one has reached a pitch at which he should be able to hear the words with the sound ear even though tightly occluded, he still states he cannot hear, one knows at least that he is an intentional malingerer. This test will expose many malingerers. *Stethoscope test:* The ordinary binaural stethoscope with funnel-shaped chest-piece is used. One ear-piece is completely occluded with wax. Standing behind the registrant the stethoscope is adjusted with the occluded ear-piece to his "deaf" ear. Words in a low whisper are spoken into the funnel-shaped chest-piece, which naturally he should hear perfectly. The stethoscope is then replaced, the occluded ear-piece being this time placed in his sound ear. If he is able to hear now approximately as well as before, we have fairly sound evidence that his deafness is either assumed or grossly exaggerated. *Tests eliciting contradictory responses:* The registrant's eyes are now uncovered, the sound or better ear is closed with a finger, and the "deaf" ear is subjected rapidly to the commoner classical tests, *e.g.* hearing distances for watch, acoumeter, whisper or conversational voice, tuning-fork tests to determine lower tone range, etc. His responses are carefully noted. Following this he is again blindfolded, and the same tests are repeated many times, fairly rapidly and in varying order. If he is a malingerer, his responses will almost surely demonstrate incongruous and contradictory variations. *Lombard's test:* This depends upon the fact that to the normal man the sound of his own voice is necessary to the proper regulation of its tone and intensity. The noise apparatus is adjusted in the sound ear and its machinery started in order to accustom him to its grating noise. He is given a book and told to read aloud in his natural voice and not to stop reading when the noise instrument is set in action. As soon as the noise begins, a man whose opposite ear is profoundly deaf will at once raise his voice, and if his deafness is absolute he may literally shout. The malingerer, on the other hand, claiming a one-sided deafness which is not real will continue to read in an even tone or in a tone only slightly elevated. *N.B.*—This is a test which a malingerer who has been coached may easily turn to his advantage.

J. S. Fraser.

Sound Perception in Deaf-mutes.—John D. Wright. "Med. Times," April, 1918.

In a large number of cases classed as deaf-mutes the perception of sound is to a certain extent retained. This vestige of hearing is too feeble to enable the child to acquire speech in the ordinary manner, yet it is

sufficient to convey to the brain the impressions of speech when the sounds originate near the ear and are loud and distinct. A child with slight sound-perception may be taught to speak when the sounds which he is to imitate are uttered close to the ear and if he is able to watch the face of his teacher part of the time in a mirror. He is not taught entirely with the aid of a mirror, but is taught to differentiate sounds without the mirror first of all to enable him to concentrate all his faculties on the training of what hearing power he has. The mirror is used to allow him to imitate the speech organs during the production of the sounds.

In a large proportion of deaf-mutes such sound-perception as remains is not sufficiently utilised in speech training, and those patients are educated by lip-reading when they might at the same time be taught to hear voice spoken into the ear.

As the normal period for the learning of speech is from infancy to five years of age, it is advisable to begin early with this part of their training.

J. K. Milne Dickie.

Modification in the Treatment of Intracranial Complications of Otitis. Temporal and Occipital Trephining.—**Henri Aboulker** (Algiers).
 “*Rev. de Laryngol., d'Otol., et de Rhinol.*” March 15, 1919.

The author begins by quoting cases illustrative of the well-known difficulty in diagnosing as to precisely what complication or complications exist, although it may be evident that there is pus in the skull. He then proceeds to show that in certain cases a serous meningitis, producing a raised intracranial pressure, may cause a slowing of the pulse, mental torpor and headache very similar to the symptoms of cerebral abscess. Leaving the pulse out of the discussion, there is in these two conditions a marked difference in the mentality, and in particular to the psychical realisation of, and reaction to, the headache. In cerebral abscess there certainly exists profound and terrible headache, but the patient does not complain of it continually. On questioning him, it is obvious that the headache is violent, but he never cries, rarely complains. The surgeon is obliged to ask searching questions to elicit a statement on the point.

By contrast, in serous aseptic meningitis, the patient, whether he utters the typical cry or not, never allows anyone to forget for long that he is in agony with headache. The author considers that the clouding of cerebation is the most important diagnostic factor—more important than the optic discs or the temperature chart. Septic meningitis is not discussed, beyond mentioning that the pulse, pyrexia, photophobia, cerebro-spinal fluid and Kernig's sign constitute a symptom-complex which is easily diagnosed from the other two above-mentioned conditions. Proceeding now to the question of the route for operative access, the author considers that the value of the stereotyped trans-mastoid route is discounted by this grave disability: that inasmuch as the diagnosis between aseptic serous meningitis and cerebral abscess is difficult, the operator may find he has opened a subarachnoid space, and exposed a brain, which are not infected. And he has done so by traversing the cavity of a mastoid exenteration which is certainly infected. The author strongly advocates the temporal route for the cerebrum and the occipital for the cerebellum.

The author relates illustrative cases, and definitely claims that these routes give the patient a better chance of recovery.

H. Lawson Whale.

The Aurist and Lip-reading.—Emma B. Kessler. "The Laryngoscope," March, 1919, p. 163.

Kessler states that three months after the war began in Europe, Germany provided classes in lip-reading. Within a short time, three deafened soldiers, two lawyers and one teacher, were enabled to follow their regular vocations through such instruction. Among fifteen persons interrogated by Kessler, who are more or less deaf, and who have become enthusiastic lip-readers, only three had heard of speech-reading through their aurist. The others obtained their information from friends or newspapers. Many of the ills of deafness could be prevented if lip-reading were prescribed to the *slightly deaf* before their deafness becomes a source of embarrassment. Few people cease seeking remedies even after it has been ascertained that medical help cannot restore the hearing. Most patients spend time and money on nostrums, which do no good, with the result that they finally assume the attitude that nothing is worth while. They can then hardly be persuaded to rouse themselves sufficiently to study lip-reading. When the deaf man realises that he can again understand the quietly spoken word his attitude towards life is changed.

J. S. Fraser.

Central Deafness.—E. R. Carpenter. "The Laryngoscope," January, 1919, p. 25.

The author records the case of a female, aged twenty-three, who had typhoid fever and five attacks of pneumonia between the ages of eleven and sixteen. For seven years she has had indigestion and dizziness, with numbness of the left leg, arm and left side of the face. Two years ago there was an abscess in the left ear and infection of the right frontal sinus. Hearing never returned to normal. One year ago she developed severe headaches and rapidly-increasing deafness in both ears. Examination: Romberg test positive, co-ordination poor, marked ataxia. No aphasia. Slight Babinski on left side. No hemianopsia. Loss of smell on the right side. No sense of taste over the anterior two-thirds of the tongue. Left corneal reflex absent. There was only a scar in the anterior part of the left drum. Right ear—conversation was $\frac{2}{10}$; left ear—conversation $\frac{1}{10}$. Rinne positive in both ears. Vestibular tests revealed spontaneous nystagmus when she looked up or down. She fell to the right. Turning reactions were almost normal, except for prolonged vertigo when turned to the left, head backward. Caloric reactions: Right ear—there was nystagmus from the vertical canal only when she looked to the left. Left ear—vertigo was greatly exaggerated and prolonged from the vertical canal. Wassermann negative. After two months' treatment with mercury and iodides the patient had convulsions, projectile vomiting and papillitis. She suddenly became deaf in the left ear. Paralysis of the left side of the face and left leg and increased numbness of the left arm came on. Six weeks after the onset of the paralysis the left ear began to discharge pus and blood. After one week she was greatly improved and was soon herself again.

Carpenter calls attention to the bilateral pons symptoms. On the left side the fifth nerve, the vertical semicircular canal fibres and the auditory tract were implicated. On the right side the pyramidal tract, the lemniscus and the auditory tract were involved. The vertical nystagmus also indicated pons trouble. The exaggerated past-pointing reaction on the left side suggests pressure-irritation to the cerebro-cerebellar motor fibres in the pons. Carpenter holds that the case was

one of a left-sided basilar abscess, possibly a temporo-sphenoidal lobe abscess, pressing against the root of the left fifth nerve, with contralateral pressure.

J. S. Fraser.

Vestibular Reactions in Central Nervous Diseases.—George H. Willicutt.

"The Laryngoscope," March, 1919, p. 145.

The following records are of interest because they show how the modern methods of investigating the vestibular apparatus are being used in America to investigate obscure nerve cases associated with giddiness:

Case 1.—Female, aged thirty, suffered from weakness of the lower limbs and headaches for one month. Present trouble began March 22, 1914, with a severe epistaxis. On March 23 the patient had an attack of vertigo, and during this day had eight to ten attacks in all. In the evening she suddenly became deaf in the right ear. On the following day vertigo developed to such a degree that the patient vomited several times, and was confined to bed. She found that the attacks were lessened by lying on the right side, and that they were more severe when the room was darkened. She had no pain, but marked tinnitus. Examination showed both ear-drums normal. Right ear, complete deafness; left ear, normal. Weber lateralised to left. Spontaneous nystagmus, rotary to the right and to the left; looking up or down produced a vertical nystagmus *upwards*. No disturbances of equilibrium. Spontaneous pointing tests normal. Turning to the right produced horizontal nystagmus to the left of 33 seconds' duration, but *no* vertigo. Turning to the left produced horizontal nystagmus to right for 35 seconds, and *no* vertigo. Caloric tests: Typical reaction on both sides, after 2 minutes. Otological diagnosis: Retro-labyrinthine lesion.

Neurological report: "Wassermann negative; intention tremor of both hands; speech slow; tactile anaesthesia in lower extremities, but no ataxia present; increased knee-jerks; Babinski present; suspicion of beginning optic atrophy. Diagnosis: Early multiple sclerosis."

Case 2.—Male, aged twenty-four. For four weeks has had greatly diminished hearing in both ears, which came on suddenly with a great roaring; severe dizziness during this attack, and has had repeated attacks since. Otoscopic examination normal. With right ear he can hear only a shout; left ear, conversational voice at 30 cm. Bone-conduction: Right ear, *nil*. Spontaneous nystagmus to right only. No Rombergism. Turning to right produced very slight nystagmus and no vertigo; turning to left produced nystagmus to right for 25 seconds and vertigo. Caloric tests: Left ear, very slight reaction after 4 minutes, the pointing error *absent*; right ear, typical reaction. Otological diagnosis: Neuritis of the eighth nerves involving especially the right cochlear branch and left vestibular branch.

Neurological examination: "Wassermann negative; paræsthesia of both hands; scoliosis in the dorso-lumbar region. Diagnosis: Syringomyelia (latent type)."

J. S. Fraser.

Cerebral Abscess of Otitic Origin with Aseptic Meningitis.—Fournioux.

"Revue de Laryngologie," April 30, 1919.

Patient admitted April 22, 1918, with acute right mastoiditis. Temperature 39.7° C. Pain severe. Prostration, nausea, clouding of intellect. On April 23 marked signs of meningitis.

April 24: Mastoid operation. Dura of middle fossa and lateral sinus exposed and of normal appearance, but no pulsation. Foul granulations in antrum and aditus.

April 25: Meningitic symptoms better, but pulse only 56.

May 3: Headache again severe. Neck stiffness. Kernig.

May 5: Temperature 37.8° C.; pulse 48. Semicomatose. Operation. Large exposure of dura of middle fossa, which was of normal appearance, and showed no pulsation. No sign of any bony lesion to show track of infection. Brain explored with trocar and large temporo-sphenoidal abscess opened.

May 7: Great improvement. Cerebro-spinal fluid turbid. Excess of albumen. Culture negative.

Recovery uneventful.

J. K. Milne Dickie.

Injuries of the External Auditory Canal resulting from Projectiles.—

Franklin E. Cutler. "The Laryngoscope," February, 1919, p. 82.

The smooth penetrating bullet-wound which injures the cartilaginous-membranous canal at its external end heals frequently without stenosis of the canal. The nearer the wounds are to the bony meatus the more apt they are to result in stenosis or atresia. Wounds of the canal are nearly always accompanied by splinter fractures. After the splinter comes away, in the course of a prolonged suppurative process, we meet with greater or lesser stenosis. In nearly all of these wounds there is injury to the temporo-maxillary articulation—a most unpleasant complication. The facial nerve is injured in an astonishing number. X-ray examination shows pieces of metal of all sizes and shapes, but it is not so satisfactory in demonstrating the finer splintering of bone. One must not lose sight of the fact that other injuries of the ear may exist, such as rupture of the drum with middle-ear suppuration; fracture or fissure of the pyramid with more or less serious injury of the labyrinth. Damage of the labyrinth occurs in a large percentage of skull and face injuries.

Separation of the cartilaginous-membranous from the bony canal is especially interesting. The bullet in passing dissects the cartilaginous from the bony wall, and on otoscopy we find a semilunar granulating ridge, springing from the floor and anterior wall and projecting prominently into the lumen of the canal. The result of these injuries in the absence of treatment is stenosis or complete atresia. Treatment may be conservative or operative. In recent cases tamponage is indicated. In old cases already stenosed Cutler recommends laminaria tents. These can be thoroughly sterilised by boiling for ten minutes without destroying their usefulness. It is necessary from time to time to intermit this treatment, but the applications must be continued until granulations are covered with epithelium. Even then the patient must be kept under observation. The treatment of splintering of the bony meatus consists in carefully removing the loose and visible splinters. One should always be on the look-out for further splinters. The treatment of complete atresia is operative only. Several methods have been attempted. (1) Excision of the scar with Thiersch skin-graft. (2) Crucial incision forming four triangular flaps which are pushed inward. (3) Excision of the scar and covering the denuded area with skin-flaps from the vicinity. Ruttin's operation consists in cutting through the external ear at its basilar attachment and removing the scar-tissue, taking a skin-flap from the mastoid process and drawing it through the incision so that it forms the posterior wall of the meatus. Granulations of the other walls can be held in check with tamponage until the epidermisation is completed.

J. S. Fraser.

Congenital Fistula of Ear.—Fournier. "Revue de Laryngologie," April 15, 1919.

A case with a fistula commencing at the attachment of the helix and running down through the parotid to the angle of the jaw, where the lower end opened. History of occasional abscesses.

J. K. Milne Dickie.

Ear Protectors.—Charles W. Richardson. "The Laryngoscope," July, 1918, p. 514.

Of the four protectors tested, the "British Tommy" proves to be the best. Soldiers are in the habit of using cotton-wool as a protector, but this is efficient only when moistened with glycerine or vaseline. It deafens the wearer more than the "Tommy." The next most satisfactory instrument is the Mallock-Armstrong. The Baum is not nearly as good as the other two mentioned.

J. S. Fraser.

Osteo-sclerosis of the Temporal Bone in Chronic Suppuration.—H. B. Graham. "The Laryngoscope," December, 1918, p. 872.

Graham admits that there may be normally in many individuals a solid mastoid. Cheatle has without doubt shown this. Graham holds that where we have a chronic suppurative ear we may have a true osteo-sclerosis, which is the result and not the cause of the suppuration. If Cheatle were right, the X-ray pictures of cases showing chronic suppurative processes would show this thickening of the antral border and mastoid process on both sides. In Graham's experience this has not been the case. In no case of chronic unilateral suppuration has the opposite side shown any evidence of embryological sclerosis, and in all cases of long standing there has been a definite thickening of the mastoid process on the diseased side. Graham has employed antero-posterior stereoscopic or single pictures of the whole head. [This method may save trouble in that it shows the tip of both mastoid processes in one picture, but it does not appear to be nearly so satisfactory as the usual method of taking each mastoid process separately.—Abs.]

J. S. Fraser.

Changing Methods and Advances in the Treatment of Progressive Deafness following Chronic Hyperplastic Otitis Media.—F. P. Emerson. "Annals of Otology," xxvii, p. 1250.

The writer confesses that in late years he has not been able to make a differential diagnosis between otitis catarrhalis adhesiva and the hyperplastic catarrhs from the view-point of aetiology. He now believes them all to be due to a toxin, and any differential diagnosis should be based rather on the tissue reaction in the tympanum than upon any difference in origin. Many cases with the apparently same aetiology show on the one hand toxic nerve charges that seem to have been caused by absorption directly through the lymphatics or blood-stream, and on the other hand a steady progression from naso-pharynx to Eustachian tube, tympanum and inner ear. The original toxic focus may be in the tonsils and pharynx, nose and alimentary canal. Careful examination is necessary in every case. Many cases can be helped; in others the process can be arrested. Many will have relapses on account of secondary foci and poor resistance. Results depend upon thoroughness and patience in searching out and draining chronic toxic foci and curing the attending infection.

Macleod Yearsley.

Cerebro-spinal Fever.—Sir H. Rolleston. "Lancet," 1919, vol. i. No. 4988, p. 541; No. 4989, p. 593; and No. 4990, p. 645.

In his exhaustive lectures on this subject Rolleston makes the following observations as to nerve-deafness: It is less common than formerly. Deafness may also be due to otitis media, which is not regarded as a common complication of cerebro-spinal fever. He refers also to the use of nasal douching with 1 in 1000 permanganate of potash or spraying with dichloramine-T as a prophylactic, and the similar local treatment of carriers.

Macleod Yearlesley.

Chronic Suppurative Otitis Media and Exemption from Military Service.
—Edward B. Dench. "The Laryngoscope," October, 1918, p. 717.

Out of 19,000 cases of middle-ear suppuration, one in every eighty-eight suffered from some intracranial lesion—either epidural abscess, sinus thrombosis, brain abscess or meningitis.

In any case of purulent otitis media, where occasional attacks of vertigo and persistent headaches are complained of, and where these symptoms seem to be dependent upon the condition of the middle ear, general military service should be forbidden. Exemption from military service on account of impairment of hearing is naturally governed by the same rules which apply to cases in which no suppuration exists.

Dench classes all cases of middle-ear suppuration under six heads: (1) Small central perforation with a history of intermittent discharge. The condition is seldom serious, and is usually relieved by local treatment. (2) Large, kidney-shaped perforation. If the mucous membrane is dry the condition constitutes no menace to life, and the patient is perfectly fit for military duty, provided the hearing comes up to the standard prescribed by the Government. (Dench believes that a patient with 520 or less in one ear and perfectly normal hearing in the opposite ear is perfectly competent for general military service.) (3) Large, kidney-shaped perforation, with the presence of granulation-tissue and profuse discharge. Cases should be accepted for observation, the granulation-tissue removed and the ear kept clean by irrigation. If at the end of a couple of weeks these ears become dry, the case comes under Class (2). (4) A perforation in the upper posterior portion of the membrana tympani with a sinus leading into the tympanic vault. The lower margin of the perforated drum-membrane has become adherent to the internal tympanic wall, while the epithelium of the drum-membrane has spread over the internal tympanic wall. We usually have a history of little or no discharge, and frequently find a dark brown crust covering the perforation, and extending out for a considerable distance on the posterior wall of the canal. These cases are the most dangerous with which we have to deal. They are prone to develop intracranial symptoms, and should not be accepted for general military service unless subjected to the radical operation. (5) Complete destruction of the drum-membrane, with sinuses leading in front and behind the short process of the malleus into the tympanic vault. If these cases are dry they should be accepted for general military service. If cholesteatoma is present, as evidenced by slight discharge, they should not be accepted for general military service without reconstruction. (6) A small perforation through the membrana flaccida without the presence of granulation-tissue. Such a case should not be accepted for military service without reconstruction, whether the discharge is constant, intermittent, profuse or scanty.

The character of the discharge (sero-mucous, muco-purulent or

purulent) aids us but little in arriving at an opinion as to whether the patient should be accepted for military service or not. Certain types are not very prone to intracranial involvement, while other types are exceedingly prone to some such complication. No type, however, is free from this danger. The presence of labyrinthine symptoms in any case of suppurative otitis media should constitute a basis for exemption, excepting those in which there is total deafness, a dead labyrinth, a dry ear, and in which the rotation test showed that compensation had completely taken place. Dench cannot too strongly urge the reconstruction of all cases of suppurative otitis media by radical operation in patients who are otherwise fit for military service. Every case of unilateral suppurative otitis media, where the discharge from the ear is alone the cause of rejection, should be subjected to the radical operation. In competent hands this operation is as free from danger as any operation in surgery. If the primary graft is used in every case where possible, the period of convalescence in the hospital is seldom over three weeks, and often not over two. In a certain small proportion of these cases there will be a slight mucous discharge from the ear from the region of the tube. This discharge constitutes no menace to life. It requires no more attention than does the washing of the face and hands. *Hearing*: Most cases greatly improved as the result of this procedure; many remained the same; very few cases had been made worse.

In cases of double suppurative otitis media the question of reconstruction naturally becomes more grave. Operation should be performed first upon the deafer ear, and, if this is successful, the other ear should be operated upon. Reconstruction removes permanently the danger of intracranial complications. The man is then able to fulfil his obligations to his country usually in a general military capacity, but always in the capacity of limited military service. Dench holds that operations should not be done at the ordinary base hospital, as they demand exact technique and considerable experience. Men should be sent to public hospitals for reconstruction, and afterwards returned to their respective military divisions.

J. S. Fraser.

Syndrome of Gradenigo Following a Case of Acute Mastoiditis Complicated by Phlebitis of the Cavernous Sinus.—U. L. Torrini.
"Arch. Ital. di Otol.," vol. xxx, No. 1.

Gradenigo in 1904 described paresis of the sixth nerve occurring in cases of acute otitis media, more rarely in chronic otitis media, with small perforation and insufficient drainage. It is accompanied by violent temporo-parietal headache. In most cases the symptoms gradually disappear as the otitis media heals. The aetiology has been obscure, as in those cases which died generalised meningitis was found, and it was uncertain whether the symptoms were due directly to the mastoiditis or to the meningitis. It was usually supposed to be due to inflammation of cells round the tube which set up a local pachymeningitis. The following case suggests involvement of the sinus cavernosus.

Child, aged nine. Admitted to the clinic April 27, 1918. For four days had had slight influenza. At end of first day pain in left ear, which was at first slight but became more intense, and later was localised behind the ear. Hot fomentations were applied without result. Child had had high remittent temperature and intense persistent headache. Examination showed opacity of left drum with moderate hyperæmia round the edges and along malleus. Nothing abnormal seen in mastoid region, but there was infiltration and extreme tenderness, most marked over the

antrum. Temperature 38.5° (100.2° F.). Operation same day—subtotal mastoidectomy. Fairly large antrum full of pus under moderate pressure. Whole mastoid cellular. Mucosa hyperæmic. Lateral sinus very far forward and occupying posterior wall of antrum. Wall of sinus opaque and thickened. Temperature on the third day 37.1° (98° F.). Headache improved at first, but returned on fourth day and became gradually worse till the eighth day. It was localised to the left temporo-parietal region. No rise of temperature. Slight discomfort on moving head. Knee-jerks slightly increased. No Kernig. No change till the sixteenth day, when there was slight chemosis of left eye. Four days later diplopia and slight dimness of vision. May 20, 1918, *i. e.*, twenty-two days after operation, paralysis of left external rectus definite. Wound opened up and dura of middle fossa exposed and some deep cells cleared out. Two days later slight exophthalmos and swelling of left cheek. From now onwards the symptoms gradually lessened and disappeared. Patient left hospital on June 26, 1918.

The symptoms in the above case were probably due to slight thrombophlebitis of the cavernous sinus. The lateral sinus walls were not healthy, and from there it would be easy for a slight infection to spread along to the cavernous sinus.

J. K. Milne Dickie.

MISCELLANEOUS.

Tic Douloureux: Treatment by Alcohol Injections.—E. R. Faulkner. "The Laryngoscope," March, 1919, p. 130.

The chief characteristics of trigeminal neuralgia (tic douloureux) are the severity of the pain and its paroxysmal nature, lasting from a few seconds to several minutes. Most of the cases begin after thirty. Once established, the disease usually lasts the remainder of the victim's life, often with remissions of months or even years. Faulkner has never observed any factor of heredity. The sexes seem to be affected about equally. The patients are people with good habits. Many of the patients take alcohol freely after the onset of the disease.

Pathology.—Sluder, Snow, Roe and Berens have described sinus disease, especially sphenoiditis, as the cause. Many dentists have found disorders of the teeth, and some cases seem to subside after teeth extraction. Faulkner himself has examined the nasal accessory sinuses in all cases, but has not found sinus disease to be a constant factor. Microscopic examinations of the Gasserian ganglion and nerve-trunks removed by operation have shown nothing abnormal.

Diagnosis.—The face on the side affected is held motionless; no form of expression is attempted. All movements are regulated to prevent any unnecessary jar. The slightest touch, even a draught of air, may start it. In most cases the facial muscles on the affected side are contracted with the onset of the spasm. Any pain lasting over one half hour is not tic douloureux. The pain may affect all three divisions at once; more often either one or two branches are involved. The second seems to be the most commonly affected.

Treatment.—*Drugs:* In one case milk of magnesia did seem to give the patient some respite. Dana believes that in the first or second year of the disease large doses of strychnine will effect a cure. Leszynsky recommends castor oil three times a day in the early stages. In the later stages no drug exercises much influence, even opiates. *Electricity:* Head mentions a constant current, the anode placed over the area of pain

and the kathode over the spine. Counter-irritation, *e. g.* the actual cautery, gives relief in some instances. All cases should be examined by a dentist and a rhinologist before operative treatment of the nerve is undertaken.

Operative Treatment.—*Nerve Section*: The second and third divisions have been cut, and a period of remission of several months has resulted. Nerve section and avulsion have been largely abandoned since the introduction of the alcohol injection treatment. Removal of the Gasserian ganglion has yielded brilliant results, the cure being permanent in nearly all cases.

Alcohol Injections.—The results recorded are almost uniformly successful as far as temporary relief goes. Faulkner has had twenty-four cases, and can report fourteen successful injections, including one injection in the Gasserian ganglion. Where he has succeeded in getting within the nerve the results have been far better, and in some of them there is a prospect of permanent relief. *Technique*: (1) A special needle, 3 in. long, 1 mm. in diameter, with its end abruptly bevelled and containing a small stylet, is inserted until the nerve is touched. It is then pushed forward a slight degree till one may judge that it is buried within the substance of the nerve. The stylet is now withdrawn and a hypodermic syringe attached. Four or five drops of 2 per cent. cocaine are injected and the stylet replaced. This should produce an immediate anæsthesia. If this is obtained, Faulkner again withdraws the stylet and injects 8 or 10 mm. of 85 per cent. alcohol. This causes no pain, and the anæsthesia becomes more complete. The patient tells one when one touches the nerve. If the operator desires to put the alcohol within the sheath of the nerve he may have to make several trials. (2) For the second division, insert the needle just below the angle formed by the zygomatic process with the malar bone, and push it slightly upward and a trifle backward through the pterygo-maxillary fissure to the foramen rotundum. (3) The landmark of entrance for the third division is on a level with the lower part of the incisura notch, and three-fourths of an inch in front of the tragus. Insert the needle with an inclination upward to the foramen ovale. One can only learn this part of the work by practice on cadavers. In the course of time the surgeon will find that the point of the needle will transmit to him the necessary information to guide him in his approach to the various foramina.

Results.—Of the fourteen cases ten have been free from pain ever since the injection, *i. e.* one month up to four years.

Untoward Results.—Slight hæmatoma is common, but is soon absorbed. Paralysis of the sixth nerve occurred in one case, but disappeared in a few weeks. The ganglion case developed a severe keratitis six weeks after injection. This recovered in three months, leaving some opacity of the cornea.

J. S. Fraser.

CORRESPONDENCE.

To the Editor of THE JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY.

SIR,—Dr. D. R. Paterson, in his interesting paper on "A Clinical Type of Dysphagia" in the current number of this Journal, refers to "the not infrequent supervention, in such [spasmodic] cases, of malignant disease at the mouth of the gullet," and remarks that "this happens too often to be merely a coincidence." My own experience certainly tends to confirm this view. The three most remarkable features

of "post-cricoid carcinoma" appear to me to be: (1) Its relative frequency in the female as compared with the male sex; (2) the early age at which it sometimes appears; and (3) the fact that one so often obtains a history of more or less difficulty in swallowing extending over many years. In many of these cases the patient volunteers the information that she "always had a small swallow," has been liable for years to "choking fits" during meals, and has had to eat with care and swallow only finely-divided food.

The atrophic changes in the buccal and pharyngeal mucous membrane which Dr. Paterson describes in cases of spasm are, I think, also rather characteristic of "post-cricoid carcinoma," and are apt to be associated with extremely bad teeth. Is there some ætiological connection between the buccal sepsis dependent on dental caries, the chronic atrophic glossitis and pharyngitis, the spasm in the lower pharynx possibly leading to injury by food particles of the thin mucous membrane, and finally, the development of "post-cricoid carcinoma"?

LIVERPOOL;

August, 1919.

I am, etc.,

THOMAS GUTHRIE.

NOTES AND QUERIES.

THE NEW PRESIDENTS OF THE SECTIONS.

The new President of the Otological Section of the Royal Society of Medicine is Mr. H. Tilley, to whom we extend our heartiest congratulations as having attained the unusual double distinction of the Chair in both of our twin Sections.

The Chair of the Laryngological Section for the ensuing Session will be filled by Mr. E. B. Waggett, D.S.O., who in addition to occupying a prominent position in the speciality has earned for himself an enviable reputation in the Army during the war.

Mr. Waggett served with distinction both in France and in Salonika, and has had conferred upon him the *Distinguished Service Order*.

GENERAL H. S. BIRKETT, M.D., C.B.

On August 26 our colleague left England to resume his practice in Montreal and his duties as Dean of the Faculty of Medicine of McGill University. He has served for five years with the colours, first in command of the Canadian Hospital at Boulogne, and then on the Military Headquarters Staff of the Canadian Army in London. During these spacious years he has won such esteem and admiration in the Motherland that we feel we are expressing the sentiment of his many friends in Great Britain in wishing him a happy and prosperous return to his own country.

DR. PERRY GOLDSMITH.

Dr. Perry Goldsmith has returned to his work in Toronto, leaving many friends behind him in the Old Country, where he has served with the Canadian Army for several years, after a period of service in France. He will be much missed at the meetings of our Section during the coming winter.

Many other medical officers of the Dominion Armies will also be missed, more particularly those who have served at the facial repair hospital at Sidecup—Col. Newland from Australia, Major Waldron and Capt. Risdon from Canada, and Major Pickerill from New Zealand—in addition to our colleagues from various other commands, as well as many visitors from the Medical Department of the American Army.

ROYAL SOCIETY OF MEDICINE: SECTION OF OTOTOLOGY.

The next meeting of the Section will be held on Friday, November 21, under the newly-elected President, Mr. H. Tilley. Notices of cases or specimens should be sent to the Hon. Secretary, Mr. H. Buckland Jones.

ROYAL SOCIETY OF MEDICINE, LONDON: SECTION OF LARYNGOLOGY.

The First Meeting of the session will be held at No. 1, Wimpole Street, on Friday, November 7, when the incoming President, Mr. E. B. Waggett, will take the chair. Notices of cases or specimens should be sent to the Hon. Secretaries, Dr. Irwin Moore and Mr. C. W. M. Hope.

AMERICAN MEDICAL ASSOCIATION: SECTION OF OTO-LARYNGOLOGY.

The Annual Meeting of the American Medical Association will be held in Atlantic City from June 9 to 13. Being a "Victory Meeting" there was almost a record attendance. Some 4500 members registered, and the Section of our speciality was frequented during every day of the meeting by some 300 to 400 members. There were many delegates from other countries—in fact, there were representatives from China to Peru. Great Britain was represented by Sir StClair Thomson and Mr. Frank Rose, who both participated in the work of the Section, and were elected Honorary Fellows of the American Medical Association.

AMERICAN MEDICAL ASSOCIATION.

The next meeting of the above Association will be held in New Orleans, probably towards the end of April, 1920, under the Presidency of Dr. Braistead, of the U.S. Navy.

AMERICAN LARYNGOLOGICAL ASSOCIATION.

The Annual Meeting of this select body was held in Atlantic City on June 16, 17 and 18 under the presidency of Dr. Coakeley. The President for next year is Dr. Norval Pierce (Chicago), lately returned home from service in France. Amongst many other contributions a remarkable one was offered by Dr. J. H. Bryan (Washington) with several colleagues on "Streptococcus Infections of the Throat." Full abstracts will appear in our pages later. Several British members were elected Corresponding Fellows, and we will publish their names as soon as the election has been ratified.

AMERICAN OTOLOGICAL SOCIETY.

The American Otological Society held its Fifty-second Annual Meeting in Atlantic City on June 16 and 17. Many valuable papers were contributed, and we hope to give full abstracts of them during the coming winter.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL SOCIETY.

The Twenty-fifth Annual Meeting of this Society, which, for brevity, is frequently referred to as the "Triological Society," was held in New York from June 6-7. Unfortunately the President, Gen. H. S. Birkett, C.B., was prevented from being in the chair, owing to his military duties in England, to the regret of all present.

There was a very large and enthusiastic gathering and a most cordial dinner presided over by Dr. Thomas J. Harris. A feature of the evening, which presented a delightful novelty to visitors from Europe, was the song-sheet handed round and the excellent musical programme. These songs varied from "My country! 'tis of thee, sweet land of liberty," and "Gaudemus Igitur" down to "Auld Lang Syne," which, though of Scottish origin, appears to have been adopted as the universal national hymn of the English-speaking race! Amongst other contributions were verses, written by Dr. Mosher and others, specially associated with the war.

BOOKS RECEIVED.

The Blind: Their Condition and the Work being done for them in the United States. By *Harry Best, Ph.D.* New York: The Macmillan Co., 1919.

National Health: From Magic, Mystery and Medicine to a National Health Service. By *Ferdinand Rees, M.D.* Price 1s. 6d. net. Bristol: John Wright & Sons, Ltd. London: Simpkin, Marshall, Hamilton, Kent & Co. 1919.

THE
JOURNAL OF LARYNGOLOGY,
RHINOLOGY, AND OTOTOLOGY.

Original Articles are accepted on the condition that they have not previously been published elsewhere.

If reprints are required it is requested that this be stated when the article is first forwarded to this Journal. Such reprints will be charged to the author.

Editorial Communications are to be addressed to "Editor of JOURNAL OF LARYNGOLOGY, care of Messrs. Adlard & Son & West Newman, Limited, Bartholomew Close, E.C. 1."

**A CASE OF INFECTION OF THE LACRYMAL SACS, MAXIL-
LARY ANTRA, PHARYNX, TONSILS, MOUTH AND PAROTID
GLANDS CAUSED BY BLASTOMYCES ALBICANS (THRUSH
ORGANISM).**

BY W. BARRIE BROWNLIE, M.D., F.R.C.S.E.,
Blackburn.

With Pathological Report

BY PROF. S. G. SHATTOCK.

THE patient, a male, aged forty-one, was first seen by me on February 16, 1918. He lived on a farm near Bolton, but was employed at a print works. He complained chiefly of nasal obstruction, with sticky discharge and dryness of the mouth. The history of his illness was interesting. Up to Christmas, 1917, he was quite free of any symptoms. At this time he developed acute dacryocystitis of both sacs, although previous to this he had not had epiphora or chronic dacryocystitis, which nearly always precede acute dacryocystitis. He did not remember getting anything in his eye accidentally. Under fomentations the inflammation of the tear-sacs subsided gradually, the trouble lasting about three weeks. About the middle of January, 1918, when the tear-sac inflammation had almost subsided, he noticed the nose getting very stuffy.

The patient, who was an intelligent man, stated definitely that previous to this time the nose had been quite free of any trouble. A few days afterwards he found the throat getting very dry, and about the end of January he stated that the jaws began to swell and he thought he had mumps. From this time he found the mouth very dry, and, as he put it, "he had not spat for a fortnight." Lately he had complained of some throbbing pain in the right ear. The photograph gives rather a poor idea of the parotid enlargement owing to the fact that there was a uniform swelling of both parotids, the right slightly more than the left, and not localised at any particular point.

The chief points noted on examination of the nose were as follows:

The turbinals were much enlarged and œdematous looking, especially the anterior ends of the inferior turbinals, just allowing a glimpse of yellowish-white mucus in the anterior middle meatus on both sides. This material was also present on the inner surfaces of the turbinals.

On examination of the mouth the most important feature was the dry appearance of the buccal, tongue and pharyngeal mucous membrane, which was dotted over with points of yellowish-white sticky mucus. The orifice of Stenson's duct on both sides, especially the right, had a definitely pouting appearance as compared with the normal, and around the orifices and also adhering to the adjacent alveolar margin were colonies of yellowish-white mucus larger than those found in the nose and pharynx. These colonies were also found at the openings of the tonsillar crypts, on the posterior pharyngeal wall, on the posterior inferior turbinals and around the openings of both Eustachian tubes, especially the right. The vault of the pharynx was quite clear. He had no cough, and the larynx and œsophagus were apparently free of infection. There was no enlargement of the sublingual and submaxillary glands, nor were any colonies found under the tongue. A few septic upper molar and bicuspid teeth were present. The right tympanic membrane was injected along the line of the malleus handle with slight impairment of hearing as compared with the other ear, which looked normal.

Both lacrymal sacs and nasal ducts were now found to be in a normal condition—no epiphora, no discharge of pus on pressure over the sacs, and the nasal ducts being quite patent to syringing.

Transillumination showed nothing definite beyond a questionable dulling of the normal light areas on both sides.

The nose was packed for half-an-hour with a 15 per cent. cocaine solution containing adrenalin, the outer wall of the inferior meatus being prepared for proof-puncture at the same time. On removal of the plugs it was noticed that the inferior turbinals had not been reduced in size at all. On both sides the Lichtwitz trocar seemed to go into the antrum more easily than is usually the case—in fact it felt like pushing the trocar through blotting-paper. Air-inflation by a Politzer bag allowed of no passage through the middle meatus at first till considerable pressure was applied; then a curious condition was found in the shape of a large amount of clear, glistening, sticky, elastic mucus, which kept coming in a slow continuous stream from the nose to the receiver. More mucus was blown from the left antrum than the right. Thereafter lavage of the antra was quite easy, the returning fluid being quite clear, and free of the large yellowish-white plugs that one meets with in ordinary antrum disease. One thought that this was a case of aspergillosis of the antra owing to the typical appearance of the mucus and the irreducibility of the turbinals after cocaine application.

A swab taken from this mucus and another from the colonies at the opening of the parotid ducts were sent to Dr. Burnet, who reported:

"I have obtained good cultures from the material sent. There is no aspergillus or other mould present, but there is a good growth of staphylococci and a well-defined saccharomyces in both specimens. The presence of the latter yeast is extremely interesting."

A film of the antrum mucus was sent to Prof. Shattock at the kind suggestion of Mr. Tilley, to whom I wrote about the case, and his report is appended, together with a report on the condition of the mucous membrane of the antra which was removed at a subsequent

operation. (I feel much indebted to Prof. Shattock for the trouble he has taken in this matter, and also for permitting me to publish his report.)

The Wassermann reaction was negative. A Von Pirquet test done later at Prof. Shattock's suggestion (see report) was quite negative both for human and bovine tuberculin.

As the patient was keen on having his nose condition relieved soon owing to the extreme discomfort, a double radical antrum operation (Caldwell-Luc) with removal of the anterior ends of the inferior turbinals was done four days after I had first seen him under chloroform anæ-



FIG. 1.

thesia. Lavage presented no difficulty this time, none of the sticky mucus being present, not having had time to collect after the previous washing-out. The decayed teeth were also removed.

The chief points noted at the operation were—First: The anterior bony wall of the left antrum in the canine fossa was deficient to just over the size of a threepenny-piece. A similar condition was noted by Syme¹ in a case described as myxomatous disease of the maxillary antra, and, as he points out, is a condition rarely met with in ordinary antrum disease. The anterior wall of the right antrum was extremely

¹ JOURN. OF LARYNGOL., RHINOL., AND OTOL., February, 1915.

thin, but not deficient. Second: The inner bony wall of each antrum above and below the attachment of the inferior turbinal was also very thin. This accounted for the fact that the passing of the trocar met with little resistance on performing the preliminary puncture. Third: The whole of the mucous membrane of each antrum was hypertrophied and of a peculiar leathery consistence, not like the usual rather soft polypoid tissue met with in ordinary antrum disease. The mucous membrane of the inferior turbinals was of the same tough consistency, probably accounting for its irreducibility by cocaine and adrenalin.

Treatment.

The usual post-operative treatment of the radical antrum operation was carried out. In addition, after each washing out, a little sugar solution (5 per cent.) with some yeast suspended in it was introduced. This treatment was suggested to me by Dr. Craik, of Ealing, who has done a great amount of useful work regarding pathogenic yeasts. A mouth-wash and gargle of chlorine water was used by the patient frequently daily.

Between times the sucking of a peppermint drop was advised to encourage salivation. In addition the throat was painted thrice daily with Mandl's paint.

Potassium iodide, starting at 10 gr. thrice daily and increasing up to 30 gr. thrice daily, was ordered.

The nose condition seemed to be relieved considerably immediately after operation, but the dry mouth and throat with parotid enlargement continued for many months. The pain in the ear and infection of the right drum-head very soon subsided.

At the end of May, 1918, some lymphatic gland enlargement along the line of the right external jugular vein was noticed for about a month. The condition of the parotids, mouth and pharynx seemed to gradually return to normal by lapse of time rather than yield to any special treatment. At the end of January, 1919, he was quite free of any symptoms, there being no enlargement of either parotid, salivation being normal, the mouth, pharynx and nose free of any discharge or discomfort.

A swab and culture taken from the nose and mouth at this time failed to reveal any yeast, only ordinary cocci (staphylo-, strepto-) being found. When last seen, in May, 1919, the patient was still quite well.

Comments.

From the pathological examination of the film of the antrum mucus and cultures from the mouth and nose swabs it is to be noticed that the infection is a mixed one, and the question arises whether the *Blastomyces* infection has been added to a pre-existent infection by the ordinary cocci. All the evidence goes against this view. Previous to the first symptoms, the man had had a normal functioning tear-passage, nose and mouth. These other organisms are almost certain to be present in any infection of these regions, and their presence in culture in January, 1919, when the *Blastomyces* was absent at the time when the man was quite well, seems to suggest that the yeast infection was a purely pathogenic one. Whatever view one takes, there is no doubt the presence of *Blastomyces* caused the peculiar symptoms which the man

suffered from. The sticky mucus resulting from these yeast and mould infections has often been noted.¹ At one time one was inclined to think that the infection had started in the nose and spread up the nasal ducts (a not infrequent occurrence in catarrhal antrum disease if one takes the trouble to wash out the antrum in every case of dacryocystitis), but the patient definitely stated that he had no symptoms whatever till three weeks after the eyes became affected. Unfortunately one did not have an opportunity of examining his nose at the time of the dacryocystitis. The organism in this case seems to have had a special liking for travelling along ducts—nasal duct, Eustachian tube, tonsil crypts, Stenson's duct. At only two stages of the disease was there external evidence of mesoblastic tissue involvement, viz. when the tissue around the lacrimal sac became inflamed, and when there was some enlargement of the superficial cervical glands, and even then there was no breaking down or sinus formation. The thinning of the antrum bony walls one can explain by a pure pressure atrophy from retained secretion, the condition being like a tense cyst. The pathological changes in the mucous membrane of the antrum similar to *Mycosis fungoides* described in Prof. Shattock's report struck one as very interesting after reading an article on *Mycosis fungoides* by Verco (*Medical Journal of Australia*, April 20, 1918). In this case a growth was removed from the right antrum, and at first pronounced to be a round-celled sarcoma, but later, when the patient very soon developed typical *Mycosis fungoides*, it was found that the skin changes and the changes in the antrum tumour were similar.

The patient here under consideration has never developed *Mycosis fungoides* or any skin lesion, and he has now been under observation eighteen months.

Fortunately, pathogenic yeast infection is rare in man. Cases have been recorded of infection of the nasal sinuses, œsophagus, bronchi, etc., and, where the frontal and posterior sinuses become affected, a fatal meningitis may result.

Probably the most important yeast infection is to be found in horses. Pallin in his book ("Epizootic Lymphangitis") mentions cases commencing in horses taking the path of infection which occurred in this patient—the eyes, nasal duct, nasal sinuses and parotid glands—and shows excellent photographs of sections of the nasal cavities, showing the nasal sinuses filled up by the same peculiar mucous exudate as was found in this patient. This disease is supposed to be due either to a saccharomyces² or a sporothrix, as is also the condition known as "thick leg" in mules and horses. The patient, as stated previously, lived on a farm and was in intimate contact with horses and cattle, but inquiry and investigation failed to reveal any sign of disease, past or present, in the animals. Although the *Blastomyces albicans* is found in the mouth and throat of some normal individuals, it is difficult to imagine that the case was one of auto-infection, and the sudden history of onset in the eyes suggests an external origin.

Second: This case, in its nasal aspect, presented the three characteristic features mentioned by Tilley (*Journ. of LARYNGOL. RHINOL. AND OTOL.*, April, 1915) to be found in cases of aspergillosis of the antrum,

¹ "Les Nouvelles Mycoses," par MM. de Beurmann et Gougerot (1911).

² This is the name given by some pathologists to the organisms which are almost invariably torules, i. e. the yeast stage of a monilia identical with thrush fungus—*Blastomyces albicans*, *Oidium albicans*, or *Monilia albi-cans*.

viz. enlarged turbinals not reducible by cocaine, inability to wash out the antrum and the peculiar mucus in its interior.

In this case it was a matter of difficulty, rather than an inability to, wash out the antrum.

In contrast, this patient was a male: all the previously recorded cases in this country by Harmer, Tilley and Syme were females. Again, neuralgic pains were quite absent in this case, and sneezing, although present, was not a marked feature. One can explain the absence of neuralgic pains by the fact that the case was recent, and also that the frontal and posterior sinuses were not involved. No polypi were present.

Third: A multiple thrush infection about the face in man, like this case, must be extremely rare, if not unique.

REPORT BY PROF. S. G. SHATTOCK.

"I have now made a full examination of the smear. The method I adopted for staining (and which I had previously tried on a mould mycelium) was to flood the slide with freshly made carbol fuchsin, diluted to 1 part in 10 of distilled water, and allow it to act in a small moist chamber for twenty-four hours: tilt off the stain and wash in water to which a trace of acetic acid has been added; then to dry and mount in xylol balsam. This gave an excellent result, all the micro-organisms being sharply stained as well as the nuclei of the different cells.

"The cells present consist chiefly of flat epithelium with here and there a polymorphonuclear leucocyte. There are no columnar cells.

"The bacteria present comprise chiefly groups of tetrads. This is probably *Micrococcus tetragenous*, which occurs in nasal mucus, but it would do also for some form of *sarcinacoccus* which may occur in tetrads as well as in packets of four upon four. *Staphylococcus* is present in fair numbers. There are no streptococci.

"There are also present rod forms, short and plump, and others larger: these may be colon bacillus or *proteus*, or both. So much for bacteria.

"Now as to yeasts and moulds. There are a few small groups of large oval cells of the *Blastomyces* kind (called 'yeasts' in the report—Dr. Burnet's—you cited, *i. e.* the culture of 'yeast' raised was from such cells). Isolated fragments of a mycelium occur here and there. The connection of the oval cells to mycelium is quite clearly shown in one spot (drawing). In this, isolated oval cells occur, and the elongating forms which are found arising from such cells in culture, or in the natural growth.

"The organism is clearly *Blastomyces albicans* or *Oidium albicans*—*i. e.* the common thrush organism.

"This would put it out of the proper moulds such as aspergillus. The infection is thus at the present stage of the disease a mixed one. *Blastomyces albicans* has been known as an antral infection, as well as one of the nasal fossae.

"I have microscopically examined the chief of the pieces curetted from the antrum. It consists of mucosa, but through the sections are scattered many pseudo-tubercular lesions, suggesting giant-cell systems. I have stained some of the sections for tubercle bacilli, others with the ordinary bacterial dye—carbol thionine—others by Gram's method, but

I find no *Blastomyces* or bacteria. I think it would be worth while to have a Von Pirquet test—both human and bovine—carried out for the sake of scientific accuracy. The pseudo-tubercles contain no foreign material, and I incline to think they arise in the glands from active proliferation of the epithelium. In *Mycosis fungoides* of the skin the sweat-glands show somewhat similar changes, and become blocked with proliferating epithelium: of this disease the pathogenesis is unknown.

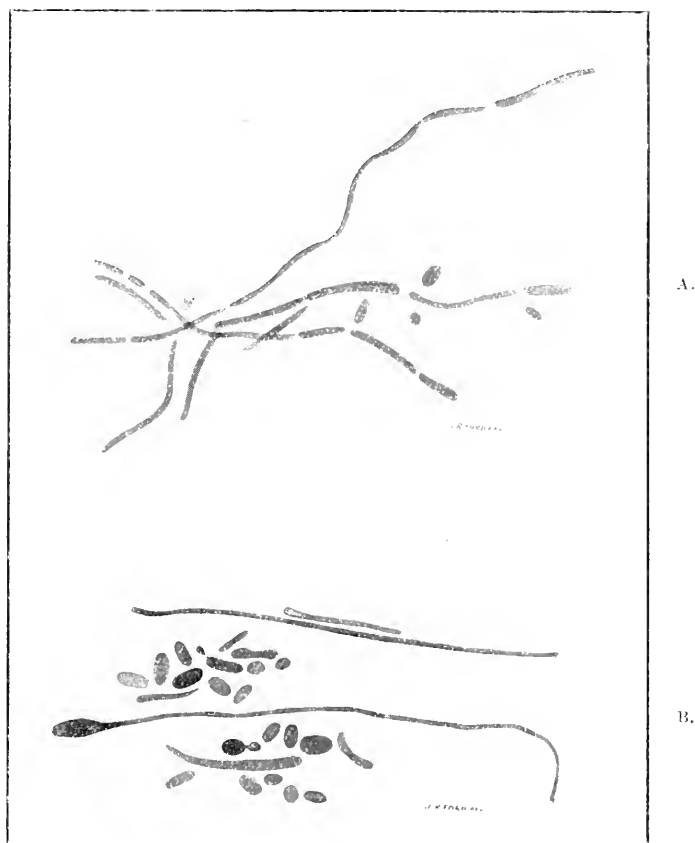


FIG. 2.—A. Group of filaments and cells from smear stained with dilute carbol fuchsin, $\frac{1}{2}$ oil immersion. B. Microscopical preparation from a pure culture of *Blastomyces albicans* on agar, prepared by Prof. S. G. Shattock, stained with carbol fuchsin, $\frac{1}{2}$ oil immersion.

"I have carefully superintended the drawing and have added one of a pure culture of *Blastomyces* (thrush fungus) to show their correspondence.

"Re the drawing: The micrococci and extraneous material is omitted as well as some of the filaments."

REPORTS FOR THE YEAR 1918 FROM THE EAR AND THROAT DEPARTMENT OF THE ROYAL INFIRMARY, EDINBURGH.

Under the care of A. LOGAN TURNER, M.D., F.R.C.S.E., F.R.S.E.

PART I.

THE COMPLICATIONS OF CHRONIC MIDDLE-EAR SUPPU- RATION. INDICATIONS FOR, TECHNIQUE AND RESULTS OF, THE RADICAL AND MODIFIED RADICAL MASTOID OPERATIONS: DETAILS REGARDING THE LABYRIN- THINE AND INTRACRANIAL COMPLICATIONS OF CHRONIC MIDDLE-EAR SUPPURATION.

(A Paper Based on an Analysis of 306 Cases of Chronic Middle-ear Suppuration, as follows: Radical Mastoid Operations, 248; Modified Radical Mastoid Operations, 17; Labyrinthitis, 26; Intracranial Complications, 25.)¹

By J. S. FRASER, M.B., F.R.C.S.Ed., and W. T. GARRETSON,
M.D.Iowa, F.R.C.S.Ed.

(Continued from p. 382.)

Results in the Skin-grafted Cases (reported on by J. S. F.).—Of the 67 patients, 44 presented themselves for inspection at periods of from three months to two and a-half years after operation. Two of these were patients who had had both ears operated upon, so that 46 of the 70 operated ears were seen. Of these, 20 appeared to be cured, and 12 others were quite satisfactory except that they showed want of care (70 per cent. cures). In 7 cases the inner wall was red and moist. Four cases still had slight purulent discharge, and one other had foul-smelling profuse discharge. Two cases showed membrane formation with a narrow opening through which pus came when the patient performed Valsalva's experiment.

If we add together the results in the non-grafted and grafted cases we get 156 operations with 79 cures, *i. e.* 50 per cent.

Hearing after Operation.—This was tested in 42 cases, with the following results: Improved, 12; as before operation, 16; worse, 6.

In the previous paper published by the operator and Capt. Milne Dickie it was noted that 26 of the 52 "radical" cases reported. Of these, 17 were dry, *i. e.* 65 per cent. The hearing was tested in 22 cases, of which 15 were improved, 4 were the same, and 3 worse.

Results obtained by Other Operators.—Bowers² reports on 107 cases, 84 of which presented themselves for re-examination: 63 of these were dry (75 per cent. cures). The hearing was improved in 60 per cent., remained the same in 34 per cent., and was worse in 6 per cent. There were no deaths, but one partial facial paralysis.

Stucky³ reports on 100 cases with 89 dry ears. In the remaining 11 the tube was open and there was recurrent mucoid discharge. The hearing was improved in 19, remained the same in 60, and was worse in 21 cases.

¹ At a meeting of the Otological Section of the Royal Society of Medicine, held February 21, 1919.

² *Laryngoscope*, 1918, xxviii, p. 803.

³ *South. Med. Journ.*, 1917, x, p. 511.

Morissette Smith¹ showed 10 consecutive cases with dry ears. The hearing was improved in 7 and remained the same in 3.

Dench has recorded 734 cases with no death. He would be ashamed to show only 50 per cent. of cures.²

Richards, in discussing Dench's paper, also holds that 50 per cent. of cures is a bad result and is due to inefficient operating. Speaking from memory, we believe that Dench and Richards claim from 70 to 80, or even 85 per cent. of cures.

On the other hand, Harris³ states that he has examined 24 cases operated upon by other American otologists, and of these 48 per cent. were dry and 52 per cent. were still discharging. The hearing was improved in 8 per cent., remained the same in 20 per cent., and was worse in 20 per cent.

It is needless to point out the divergence between the results claimed by Dench, Richards, Smith, Bowers and Stucky on the one hand, and those reported by Harris on the other. The writers are disposed to believe that the statements of Harris more nearly represent the results obtained by the majority of operators—at least before the days of immediate skin-grafting—than do those reported by the group of otologists mentioned above.

We have attempted in the following table to associate the appearances present on otoscopy with the state of the hearing, conditions found at and the result obtained by operation. Although the numbers are small we have given the results as percentages for the sake of clearness.

MODIFIED RADICAL OPERATIONS.

Sex.—Of the 17 cases, 10 were males and 7 were females.

Age (in decades).—One to 9 years, 1; 10 to 19, 3; 20 to 29, 8; 30 to 39, 2; 40 to 49, 2; 50 to 59, 1. Average age, 26 years.

Residence.—Edinburgh and district, 11; country, 6.

Side.—Right, 10; left, 7.

Cause.—This was stated in 6 of the 17 cases, as follows: Scarlet fever, 1; measles, 3; teething, 1; mill accident, 1.

Duration.—As in radical operations.

Nose.—In 5 cases there was no note of the condition of the nose. Of the other 12 cases 4 were normal, 3 showed deviation of the septum, 1 showed hypertrophic nasal catarrh, and 3 showed both deviation of the septum and hypertrophic catarrh; 1 case had nasal polypi.

Pharynx.—In 4 cases the condition of the pharynx was not noted. Of the remaining 13 cases, 10 were normal and 3 had enlarged tonsils and adenoids.

Condition of Meatus and Membrane on Operated Side.—In two of the 17 cases the condition of the membrane could not be seen on account of the presence of a polypus. In 3 others the membrane could not be seen, in 2 owing to sagging of the meatal wall and in the other owing to meatal stenosis. Of the remaining 12 cases 1 showed central perforation, 5 showed posterior perforations, and 5 showed attic perforations: 1 showed a posterior and also an attic perforation.

Condition of Meatus and Membrane on Non-operated Side.—Normal,

¹ *Annals of Otol.*, 1918, xxvii, p. 374.

² *Ibid.*, 1917, xxvi, p. 202.

³ *New York State Med. Journ.*, 1917, xvii, p. 17.

I. Otoscopic appearances.		II. Hearing before operation. (Percentages.)						III. Condition of antrum at operation. (Percentages.)						IV. Result of operation. Percentages						V. Hearing after operation. Percentages.					
Total.		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
Drumhead seen.	Anterior perforations	4	50	—	50	—	75	—	—	25	—	25	50	—	50	—	50	—	50	—	50	—	50	—	50
	Central	21	5	14	33	29	19	5	5	43	33	14	11	33	19	19	10	19	14	21	21	38	11	21	38
	Posterior	38	3	18	33	23	3	21	6	37	33	23	18	34	8	18	13	27	29	18	11	42	—	29	42
	Attic	22	9	26	27	23	5	18	5	11	9	51	27	36	14	18	9	23	5	14	50	31	—	50	31
	Multiple	5	40	—	60	—	40	—	20	40	10	40	40	40	20	—	40	20	—	20	40	40	—	40	40
Total loss of drumhead		10	10	20	50	20	10	20	10	30	30	30	30	30	50	—	20	—	20	30	10	60	—	30	10
Total.		100	6	21	35	30	8	20	6	27	18	29	21	32	12	21	10	25	16	20	23	41	—	20	41
Drumhead not seen.	Polypus without cholesteatoma	122	2	10	33	11	11	20	6	22	30	22	10	26	12	16	11	35	30	19	10	11	—	19	11
	Polypus with cholesteatoma	7	—	11	29	57	—	29	—	11	11	13	29	14	11	29	29	11	42	29	—	29	—	29	29
	Cholesteatoma blocking meatus	10	10	10	50	—	20	20	10	50	20	20	20	40	20	20	20	20	30	30	10	30	—	30	30
	Stenosis of meatus	9	—	22	22	34	22	22	—	34	—	44	11	34	11	11	22	22	22	11	11	36	—	11	36
	Total.	148	2	13	30	45	10	20	5	23	26	26	11	27	13	17	11	32	30	20	9	41	—	20	41

II. Hearing before operation :

- (1) Good hearing (whisper at 6 ft.).
- (2) Fair hearing (C.V. 4 to 12 ft.).
- (3) Moderate deafness (C.V. 1 to 4 ft.).
- (4) Severe deafness (C.V. 1 ft. or less).
- (5) Not tested.

III. Condition of antrum at operation :

- (1) Antrum healthy.
- (2) Bony walls healthy; antrum contained watery fluid.
- (3) Antrum contained mucopus, or the mucosa was swollen or congested.
- (4) Pus or granulation-tissue present.
- (5) Cholesteatoma.
- (6) In these cases the antrum was practically healthy, while the aditus or attic contained cholesteatoma.

IV. Result of operation :

- (1) Good result; operation cavity dry.
- (2) Cavity satisfactory, but showed want of cure.
- (3) Cavity moist; tube open with mucoid discharge.
- (4) Poor result; pus present with granulations or false membrane formation.
- (5) No report.

V. Hearing after operation :

- (1) Hearing improved.
- (2) Hearing same as before operation.
- (3) Hearing worse.
- (4) Hearing not tested after operation.

3; evidence of Eustachian obstruction, 7; chronic suppurative otitis media, 1; results of chronic suppurative otitis media, 5; meatus narrowed after an injury, 1.

Hearing before Operation.—Good, 2; fair, 8; moderate deafness, 6; severe deafness, 0; not tested, 1.

Vestibular Apparatus.—This was tested in 15 of the 17 cases: 14 cases showed normal reaction to caloric or rotation tests; the remaining case showed spontaneous nystagmus to the operated side and a well-marked fistula symptom on the operated side.

Indications for Operation.—What are the indications for the modified radical operation in cases of chronic middle-ear suppuration? Kaufman¹ states that the operation is indicated in cases of disease confined to the antrum and mastoid in which the ossicles are in place. It is difficult to know, however, how he ascertains these data. It is usually considered that Heath's operation is indicated in cases with good hearing. In our experience such cases belong to one of two groups: (1) Cases with "central" perforation in the lower or anterior portion of the drumhead and with a muco-purulent discharge. These cases are really tubo-tympanic suppurations in which the upper and posterior portions of the middle-ear cleft (attic, aditus and antrum) are not seriously involved. We believe that it is useless to open the mastoid antrum in such cases according to Mr. Heath's method. Even the radical operation itself with curettage of the Eustachian tube too often fails to stop the discharge. We believe that the best treatment for this group consists in (a) attention to the nose and nasopharynx, especially the removal of a large "posterior end," operation for tonsils and adenoids, treatment of nasal accessory sinus suppuration if present, etc. (b) Syringing the Eustachian tube through the Eustachian catheter. (c) Syringing the tube by means of an ordinary metal ear syringe with an olivary end which tightly fits the meatus. The fluid passes down the tube and returns by the nose. Argylol can be applied to the tube by these two methods. (d) Vaccine therapy.

(2) The second group in which hearing is often good consists of cases with attic perforations. In these, cholesteatoma is almost invariably present, and we understand that Mr. Heath at one time regarded cholesteatoma as a contra-indication to his operation. If this is still so, we cannot agree with Mr. Heath's view, for we have operated on several cases of attic perforation with cholesteatoma in which a modified operation yielded a perfectly dry ear with the retention of excellent hearing. In these cases the external wall of the aditus and attic were removed, but the lower portion of the drumhead along with the ossicles were not touched.

(3) The only remaining group of chronic middle-ear suppuration is that in which there is a perforation in the posterior portion of the drumhead extending to the margin. In many of these an aural polypus is also present. We have found that in the majority of these cases the long process of the incus is absent so that the continuity of the ossicular chain is broken. The hearing is often poor, but if it is good the modified radical operation should be performed.

Our usual indication for the modified radical in preference to the radical operation was the retention of (1) good hearing in the operated ear or (2) moderate hearing when the other ear was distinctly deaf.

Technique.—As in the radical operation up to the point at which

¹ *Annals of Otol.*, 1917, xxvi. p. 543.

the inner end of the bridge remains. Koerner's flap is then cut and any polypus in the meatus removed with forceps. If an attic perforation is present the inner end of the bridge with the outer attic wall is removed. Special care is necessary to get away all bone chips. Marriage's skin-graft is applied to the antrum in the majority of cases.

Operation.

Superficial Tissues.—Normal, 13; scar from accident, 1; scar from old operation, 1; subperiosteal abscess, 2.

Mastoid Cortex.—Normal, 14; eroded, 2; old operation cavity, 1.

Mastoid Process.—Sclerotic, 11; cellular, 5; scar-tissue, 1.

Mastoid Antrum.—Healthy, 3; contained only watery, brownish or blackish fluid, 2; mucus or muco-pus with swollen mucosa, 6; pus and polypoid mucosa and granulations, 3; contained cholesteatoma, 3.

Sigmoid Sinus.—In 5 cases the sinus was far forward (exposed by gouge) and found normal. In no case was it exposed by disease.

Progress.—Of the 17 patients 9 made uneventful recoveries. Two cases had stitch abscesses. In 2 cases the posterior wounds suppurated slightly. One patient had slight nystagmus to opposite side and another had rotatory and lateral nystagmus to the affected side on the day following operation. One patient had slight fever and some swelling of the auricle, but no redness, and the condition soon cleared up.

Results.

Twelve of the 17 patients reported after operation. Of these, 9 were quite satisfactory. In 3 cases the cavity was still moist.

Hearing after Operation.—This was tested in 12 cases, as follows: Improved, 10; as before operation, 1; worse, 1.

We have attempted to associate the appearances present on otoscopy with the state of the hearing, the conditions found at and the result obtained by operation. The cases have been divided into the following groups:

(1) There was a central perforation in 1 case, with moderate hearing, and the antrum contained only mucus. The meatus was still moist five months after operation.

(2) In 5 cases the perforation was in the posterior superior part, and in 3 of these a polypus was also present. In 1 of the 5 the hearing before operation was good, in 3 it was fair and in 1 moderate. The antrum was practically healthy in 1 case. In a second it contained only brownish fluid. The third contained muco-pus. In the fourth there was pus and polypoid mucosa, and in the fifth cholesteatoma. The result is known in 4 of the cases, and in all of these the ear was dry. The hearing was improved in 2 and remained the same in 1 case.

(3) An attic perforation was present in 6 cases, in 2 of these combined with the presence of polypus or granulations. The hearing was good in 1 of the 6 cases, fair in 4 and moderate in the remaining 1. The antrum was healthy in 1 case, but the attic contained cholesteatoma. The antrum contained discoloured fluid in 1 case. In 2 the antrum contained muco-pus and in 2 cholesteatoma. The result is not known in 2 cases. The ear remained moist in 2 cases, while in the remaining 2 the ear was dry. Of the 4 cases who reported, the hearing was improved in 2 cases, remained the same in 1 and was worse in 1.

(4) In 1 case the meatus was stenosed, so that the position of the perforation was not ascertained. Hearing was not tested. The antrum was healthy. The result as regards condition of the cavity was excellent.

(5) In 2 cases there was sagging of the posterior superior wall of the meatus, preventing inspection of the membrane. In 1 of these the hearing was fair and in the other moderate. In both cases the antrum contained pus and polypoid mucosa. One case did not report, but in the other the ear was dry and the hearing improved.

(6) In the 2 remaining cases the meatus was occluded by a polypus and the position of the perforation not ascertained. In 1 of these the hearing was good and in the other moderate. In both the antrum contained only muco-pus. One patient did not report, but in the other the result was good and the hearing improved.

LABYRINTH CASES.

The labyrinth cases numbered 26, 16 of whom were males and 10 females. The age of the patients varied from 5 to 53 years—as a rule between 20 and 30. It is notable that the average age (25) was considerably more than the average age (19) of the intracranial cases. Eleven of the patients resided in Edinburgh or its neighbourhood and 15 came from the country. Cholesteatoma was present in 13 of the 26 cases: granulations and polypi in 21 cases. In 3 cases there was an attic perforation and in 2 cases a posterior marginal perforation could be seen. A subperiosteal abscess was present in 5 cases and facial paralysis before operation in 3.

Symptoms.—Pain in the ear or head, 18 cases: fever in only 2 cases: giddiness, 16 cases: vomiting, 8 cases. Noises in the head formed a marked symptom in 1 case and were so bad that the patient insisted on operation.

Hearing.—Not tested in 2 cases owing to the age of the patients. In none of the remaining 24 cases was the hearing good. Moderate hearing (conversation voice at from 1 to 4 ft.) was present in 4, and severe deafness (conversation voice at less than 1 ft.) in 8 cases. Total deafness in 12 cases.

Vestibular Symptoms.—Spontaneous nystagmus, 8 cases; pointing error, 2 cases: fistula symptom present in only two instances, although there were 12 cases of circumscribed labyrinthitis. Rotation nystagmus was normal in only 3 of the cases, while it was reduced in 11. In the others it was not tested. Caloric nystagmus was not obtained in 13 cases in which it was examined for. Many of these, however, had cholesteatoma and polypus. Caloric nystagmus was present in 9 cases of circumscribed labyrinthitis.

Type of Labyrinthitis, Operation Performed and Result.

(a) Of the 26 patients 12 were cases of circumscribed labyrinthitis. In 10 of these the radical mastoid operation only was performed, and 3 of them were skin-grafted. All of the patients recovered. In 4 of the 10 the hearing was improved, in 3 the hearing remained the same, in 3 the hearing was not tested after operation. In one of the remaining cases double vestibulotomy was performed in addition to the radical mastoid operation. The patient recovered but had no hearing on the operated side. In the last case Neumann's labyrinth operation was

performed in addition to the radical mastoid operation. This patient recovered, but was also deaf on the operated side.

(b) Diffuse purulent labyrinthitis (manifest)—3 cases—following the radical mastoid operation. In 2 of these a fistula was present in the lateral canal at the time of the radical operation. In 1 case the radical mastoid operation alone was performed. The patient recovered with loss of hearing. In 2 cases vestibulotomy was done when the patients developed labyrinth suppuration. Both patients recovered, with loss of hearing.

(c) Latent labyrinth suppuration, 8 cases; in 6 of the 8 cases the radical mastoid operation and double vestibulotomy were performed. All 6 patients recovered but with total loss of hearing. In 2 cases the radical mastoid operation, plus Neumann's operation, was performed. One of these patients recovered and 1 died.

(d) Spontaneous cure of labyrinth suppuration, 2 cases. In both of these the radical mastoid operation only was performed. Both patients recovered.

Details of two fatal labyrinth cases :

CASE 3.—W. A.—, male, aged five. Admitted March 6, 1913. C.O.M.S., right, for two years. Pain and swelling behind right ear for two days. Patient is stated to have pulmonary tuberculosis. Temperature 100 F., pulse 118. Total deafness in right ear. No spontaneous nystagmus or Rombergism. Cold caloric reaction absent on right side. Radical mastoid and labyrinth operation: antrum contained pus; lateral canal prominence flat and reddish; fistula into cochlea; promontory softened; dura of triangular area exposed and separated from posterior surface of petrous; free removal of bone, however, failed to show any trace of posterior or lateral canals; these had evidently become filled up by new bone-formation. Facial twitchings on two occasions. On following day signs of meningitis became evident. Death four days after operation.

Post-mortem.—Basal meningitis; oedema and congestion of brain; no perforation of dura of posterior or middle fossæ; caseous areas at root of lung; subsequent microscopic examination of the inner ear showed that the canals had all been obliterated by new bone-formation, while the vestibule and lower part of the cochlea contained granulation-tissue.

Remarks.—The operator found that while curetting the promontory towards the close of the radical operation the spoon passed into the cochlear cavity, which contained pus and granulation-tissue. It was therefore considered best to perform Neumann's labyrinth operation. The case was evidently one in which spontaneous cure of labyrinthitis had occurred in the semi-circular canal region while the vestibule and cochlea still contained pus and granulation-tissue.

CASE 4.—M. G.—, female, aged twenty-six. Admitted August 4, 1911. C.O.M.S., bilateral, after scarlet fever and diphtheria at the age of five years. The right ear has for years been completely deaf. Four weeks before admission she received a blow on the left ear and suffered from giddiness and vomiting for two days. The left ear has now become quite deaf and she has had pain and noises in it since her accident. On both sides the drumhead is absent, and the inner wall pink and moist. No spontaneous nystagmus or fistula symptom. Cold caloric reaction absent on right side but on left produced nystagmus in 20 seconds. Conservative treatment adopted but failed to benefit the noises. Patient insisted on operation, though told it was not free from danger. Radical mastoid operation on left ear; cholesteatoma present; inner wall cleansed with peroxide and painted with iodine; lateral canal opened; external wall of vestibule and cochlea removed, and modiolus curetted; cavity packed with iodoform worsted. In the evening patient sick and giddy with marked nystagmus to the right. External objects appeared to move from right to left. Dressings soaked with cerebrospinal fluid. Patient reports the noises have gone. During the next few days signs of meningitis developed—fever, headache, Kernig, stiffness of neck. Lumbar puncture evacuated turbid fluid under tension. Second operation: Bone removed from triangular area and dura of posterior fossa opened. Drain inserted. Later, patient became comatose, with Cheyne-Stokes respiration. Death 18 days after the first and eleven days after the second operation. Permission for autopsy refused.

[illegible]

0. = Absent. R. = Reduced. — = Not tested. P.O. = Post-operative after radical operation. G. = Skin-graft applied. I. = Improved hearing. Same hearing. W.A. = Operation cavity wants attention. S. = Structure of external meatus.

Remarks.—This patient declared that she would "go mad" unless something was done to relieve her noises, and it certainly appeared that she spoke the truth. It would have been better, however, if the radical operation alone had been performed in the first place, so as to obtain if possible a clean, dry cavity. If in spite of this the unbearable noises had continued, the removal of the cochlea could then have been performed with less risk.

INTRACRANIAL COMPLICATIONS.

These cases number 25, of whom 17 were males and 8 were females. The average age was 19 years. All the patients were under 30 years of age.

The Edinburgh Royal Infirmary draws from a very large area, including Fifeshire, the Lothians and the border counties. In fact the majority of the patients dealt with in this report came from districts outside Edinburgh and Leith. Fifteen of the 26 labyrinthine and 17 of the 25 intracranial cases came from the country. Many of the cases with intracranial complications were not sent in for several days or even for one or two weeks after grave symptoms had developed. For this reason it is not surprising that there is a considerable mortality associated with operations for the relief of intracranial lesions. Up till comparatively recently the course on "diseases of the nose, ear and throat" has not been compulsory, and many general practitioners fail to realise the serious nature of symptoms arising as a result of middle-ear suppuration. The majority of practitioners have now learnt to send in to hospital without delay cases of appendicitis, strangulated hernia or ruptured gastric or duodenal ulceration, but they still retain cases of suppurative otitis media associated with headache, vomiting, giddiness, rigors, etc., and treat them by means of sedative powders or counter-irritation.

In 8 of the intracranial cases there was delay in operation. As a rule this was the fault of the patient or his friends, who, refused operation, but in one or two cases the intracranial complication occurred between the time at which the patient was first seen (when no urgent symptoms were present) and that at which there was a vacant bed ready in the Department. Such occurrences are almost bound to happen in the presence of a long "waiting list." Four of these 8 cases ended fatally.

Cholesteatoma was present in 18 of the 25 cases.

In most instances more than one intracranial complication was present.

(1) *Extradural Abscess.*—Eighteen cases, 9 recoveries and 9 deaths. A perisinus abscess was present in 15 cases and an extradural abscess in the middle fossa in 1 case. In 1 case both perisinus and middle-fossa abscesses were present. In 7 cases extradural abscess was the only intracranial complication present; all of these cases recovered.

(2) *Labyrinthitis.*—Seven cases associated with intracranial complications and not included in previous part. (a) Circumscribed labyrinthitis, 3 cases—1 recovery and 2 deaths. Of the 2 fatal cases 1 had sinus thrombosis and the other had purulent meningitis. (b) Diffuse labyrinthitis, 1 case, recovery. (c) Latent labyrinthitis, 3 cases—1 recovery and 2 deaths. Of the 2 fatal cases 1 had sigmoid sinus thrombosis and meningitis and the other had cerebellar abscess.

(3) *Sigmoid Sinus Thrombosis.*—Twelve cases—6 recoveries and 6 deaths. In 3 of the 6 fatal cases purulent leptomeningitis was already present on admission to hospital and 1 other developed purulent leptomeningitis after admission.

(4) *Temporo-sphenoidal Abscess*.—Four cases—1 recovery and 3 deaths. In 2 of the 3 fatal cases rupture into the lateral ventricle had probably occurred before the admission of the patient to hospital. In the remaining case rupture occurred after admission.

(5) *Cerebellar Abscess*.—Three cases—1 recovery and 2 deaths. One death occurred from septic œdema of the brain, spreading from the walls of the abscess; the other was associated with meningitis.

(6) *Leptomeningitis*.—Thirteen cases. (a) Serous meningitis, 3 cases—all recovered. (b) Purulent meningitis, 10 cases—1 recovery and 9 deaths. In all the fatal cases other complications were present, as follows: Circumscribed labyrinthitis, 1; latent labyrinthitis and cerebellar abscess, 1; sigmoid sinus thrombosis, 4; temporo-sphenoidal abscess, 3.

Summary.—Of the 25 cases 13 recovered and 12 died.

DETAILS REGARDING THE 25 CASES OF INTRACRANIAL COMPLICATION OF CHRONIC MIDDLE-EAR SUPPURATION.

CASE 5: C.O.M.S.: *Acute Mastoid Exacerbation with Bezold's Mastoiditis; Perisinus Abscess; Sinus opened, but no Clot; Graft of fascia applied; Slight Fever for a Few Days; Plastic Operation; Complete Recovery*.—No. 407. M. K.—, female, aged nine, first seen August 30, 1916, with a history of discharge from the left ear of two years' duration after scarlet fever. Tonsils and adenoids were removed a year before admission, but otorrhœa continued. Three days before admission the left ear became very painful, and on the following day a swelling appeared in the neck and behind the left ear. *Examination*: Right drumhead retracted; left meatus full of pus. There was a large oedematous swelling over the left mastoid, extending into the neck for a distance of about one and a-half inches below the tip of the mastoid. The child held her neck rigidly, with the head inclined to the left. Temperature 100.4 F., pulse 100. Child too ill for functional examination of ear. August 13: Radical mastoid operation left side. Superficial tissues oedematous; mastoid process large and cellular, the cells being full of pus; sigmoid sinus exposed by disease and large extradural abscess present in posterior fossa. A Bezold abscess was present internal to the tip of the mastoid. Sinus wall presented a greenish appearance. The sinus was opened with a knife, but no thrombus present. A postage-stamp graft of fascia was therefore applied. Operation cavity was packed and the wound left open. September 2: Temperature 101.4° F.; at 8 p.m. pulse 100. Yesterday the temperature only reached 100° F. In other respects the child doing well. September 3: Temperature again 101.4° F., pulse 120. Veins of ocular fundus engorged, but disc otherwise normal. September 4: Temperature subnormal, pulse 90. Child vomited once. She has complained of pains over the region of the appendix, but a general surgeon saw no necessity for interference. September 5: Temperature 99.2° F. On September 6 the temperature came down to normal and remained between 97° and 98.4° F. until the patient's discharge. On September 28 plastic operation performed to close the wound behind the left ear. Patient was discharged on October 17 with the wound entirely healed and operation cavity quite dry.

Remarks.—This case was apparently one of mild chronic suppurative otitis media in which an acute exacerbation had occurred, involving the air-cells of the large pneumatic mastoid, and resulting in an extradural perisinus abscess and in a Bezold abscess beneath the tip of the mastoid. The appearance of the sinus at operation led one to open it, but apparently no thrombosis was present. A graft of fascia was therefore applied. For the next three or four days the condition of the patient gave rise to some anxiety, but thereafter the temperature fell to and remained normal. It is quite possible that some sinus thrombosis was present, if not before operation, at least after the sinus had been opened. The ultimate result, however, justified the policy of non-intervention during the short period of fever succeeding the operation.

CASE 6: C.O.M.S. with *Polypus; Labyrinth Healthy; Conservative Treatment failed; Acute Mastoid Exacerbation; Perisinus Abscess and Bezold's Mastoiditis; Radical Mastoid Operation; Uninterrupted Recovery*.—No. 401. D. B.—, male, aged fifteen, came to the Infirmary December 18, 1915, with a history of discharge

from the right ear of more than one year's duration. On examination the left drumhead was indrawn, while the right meatus showed a polypus surrounded by pus. With the noise-apparatus in the left ear the patient could hear the conversation voice at one foot. Tuning-fork tests showed middle-ear deafness. Fistula symptom absent. Cold syringing of the right ear caused nystagmus to the left in thirty seconds. The aural polypus was removed under ethyl chloride anaesthesia, and it was then seen that the right drumhead had almost totally disappeared, and that the promontory showed a raw area from which the polypus had apparently originated. Bezold's conservative treatment was begun January 21, 1916, by Dr. Andrew Campbell and continued till May 31. The discharge, however, remained fetid. The patient returned August 8, complaining of pain behind the right ear of two weeks' duration and of mastoid swelling for one week. August 10: Radical operation on right ear: oedema of superficial tissues; small subperiosteal abscess at the mastoid tip; the mastoid process was one large abscess cavity; the sinus was exposed by disease and a perisinus abscess present in the posterior fossa; the antrum showed cholesteatoma, while the malleus and incus were absent or not found. Only the upper part of the wound was stitched, the lower end being drained. August 11: Temperature, which was normal before operation, has only risen to 99° F., pulse 80, patient doing well. August 12: Wound closed. August 27: Conversation voice at 18 in. by right ear. Operation cavity satisfactory. September 2: Discharged.

Remarks.—This case illustrates the fact that even the most careful intratympanic syringing, with drying and the insufflation of boric acid, fails to cure cases with cholesteatoma in the attic, aditus and antrum. Bezold's treatment was carried out daily for four months, so that it got every chance. In August the patient had an acute exacerbation with an extradural perisinus abscess, calling for the radical mastoid operation. Unfortunately he did not report in 1917 or 1918, so that the ultimate condition of the operation cavity cannot be stated.

CASE 7: *Synopsis of Case.*—No. 263A. G. L.—, male, aged nine, first seen February 19, 1914. C.O.M.S., right with recent earache and stiffness of neck. One rigor before admission. Evening fever of 102° F. Cerebro-spinal fluid slightly turbid and under great tension. R.M.T. red and bulging, with small posterior perforation. Conversation voice heard at 4 ft. with noise-box in left ear. Spontaneous nystagmus to left and spontaneous pointing error to right and considerable drowsiness. Vestibular apparatus reacted to cold caloric test. Patient deviates to right on walking with eyes shut. Schwartz operation: Large, foul perisinus abscess evacuated; sinus wall showed granulations; sinus opened accidentally and bled freely; pressure applied. Next day cerebro-spinal fluid clear but still under pressure. Nystagmus and pointing error continued. Extensor response on Babinski's test. Kernig's sign present. Within a week all signs of meningitis disappeared, but a few days later patient developed scarlet fever and was removed to City Hospital. On dismissal, right drumhead healed though retracted. Whisper heard at 4 ft. (This case was recorded in full in *Edinburgh Medical Journal*, January, 1915.)

CASE 8: *Synopsis.*—G. P.—, male, aged seven. C.O.M.S., right, after whooping-cough. Pain in right ear for one week, with drowsiness; vomiting for one day. Cholesteatoma in right meatus. Functional examination impossible but no spontaneous nystagmus present. Lumbar puncture—cerebro-spinal fluid under great tension but clear; no growth. Rigor, with temperature of 104° F. on day after admission. Operation revealed a large extradural perisinus abscess with healthy red granulations on sinus wall; cholesteatoma in attic. Sinus not opened. Vestibular apparatus responded to caloric test under anaesthetic. Temperature 104° F. on night of operation, pulse 128, Kernig doubtful. No stiffness of neck. Temperature fell to subnormal and pulse to 60. All signs of meningitis disappeared. Uneventful recovery. (Case recorded in full in *Edinburgh Medical Journal*, January, 1915.)

CASE 9: C.O.M.S.: *Extra-dural Perisinus Abscess; Erosion of Posterior Canal; Radical Mastoid Operation followed by Acute Labyrinthitis; Nernmann's Labyrinth Operation; Recovery.*—No. 168. W. F.—, male, aged thirteen, first seen August 28, 1912, with a history of discharge from the right ear of three years' duration. During the last three years he has complained of deafness and noises in the right ear, and eighteen months ago he commenced to have attacks of giddiness. For the last three days he has had pain in the right ear. *Examination:* Nose and throat healthy. Left drumhead normal. After the foul-smelling pus had been syringed out, the right drumhead showed a perforation in the posterior part, with granulations. No mastoid swelling or tenderness. *Cochlear apparatus:*

Left ear—whisper at 9 ft. +. Right ear—whisper at 1 ft. Middle-ear deafness right side. *Vestibular apparatus*; No spontaneous nystagmus or Rombergism. No fistula symptom. Rotation to right produces nystagmus to left for thirteen seconds; rotation to left produces nystagmus to right for seventeen seconds. Cold syringing left ear produces nystagmus in thirty-five seconds; cold syringing right ear—no nystagmus in two and a-half minutes.

August 29: Patient's temperature rose to 101° F. last night, pulse 100. Tenderness present to-day over right mastoid antrum. *First operation*; Radical mastoid operation by house-surgeon, assisted by J. S. F. Cortex normal; mastoid process diploetic; foul pus in antrum; small perisinus abscess; bone in roof of antrum diseased, but dura of middle fossa healthy; lateral canal intact; considerable bone disease on inner wall of antrum in region of posterior canal.

August 30: Temperature normal, pulse 92. Marked vomiting. Third degree nystagmus to sound side and patient lies on this side. Slight pointing error to the right. Slight facial paresis on right side. In view of the findings at operation and of the presence of acute labyrinthitis after operation it was decided to open and drain the inner ear spaces. *Second operation* at 1.30 p.m. (J. S. F.) Neumann's labyrinth operation performed. It was found that the posterior canal had already been opened at the first operation. Facial nerve exposed for about a quarter of an inch. It appeared red and swollen but had not been cut through. Vestibule freely opened in front of facial nerve. Operation cavity lightly packed and wound left open. In the evening the temperature was 98.2° F. and the pulse 96. Nystagmus as before. Patient states that he feels as if he were whirling round. August 31: Temperature 98 F., pulse 84. No vomiting since 6 p.m. yesterday. Sensation of rotation has passed off. September 3: Temperature and pulse normal, very slight nystagmus. Facial paresis as before. No giddiness, or sickness. Wound behind ear stitched up. September 11, 1912: Rotation to right produces nystagmus to left for fifteen seconds, whereas rotation to left produces nystagmus to right for only five seconds. September 29: Operation cavity is becoming covered with epithelium. General condition satisfactory. Patient discharged, to attend in out-patient department. October 22: Facial paralysis passing off. Operation cavity almost healed. November 10: Facial paralysis practically cured. No discharge in operation cavity.

CASE 10: *Synopsis*.—No. 379. R. W. —, male, aged six. First seen October 8, 1910, suffering from C.O.M.S. (right), with polypus. Patient admitted, but as he cried his mother refused to leave him. Boy brought back six years later, with pain in right ear and history of rigors, headache, drowsiness and delirium. Head flexed. Complete deafness in right ear. Radical mastoid operation; cholesteatoma present: sinus exposed by disease and injured during operation, with resulting profuse hemorrhage; lateral canal opened by cholesteatoma. Neumann's labyrinth operation performed. Next day temperature rose to 104 F. Sigmoid sinus opened and clot turned out; jugular not ligatured. Fever continued and two days later a third operation was performed (jugular ligature). Intravenous injections of eusol. Recovery. (Case recorded in full in *British Medical Journal*, 1917, Pt. I, p. 357.)

CASE 11: *C.O.M.S., with Cholesteatoma; Acute Exacerbation; Perisinus Abscess; Uninterrupted Recovery*.—No. 300. J. W. —, male, aged eight, first seen May 19, 1915, suffering from discharge from the left ear for some years. A mastoid operation was performed on the right ear last autumn. For three weeks patient has had pain in the left ear and for one week there has been some swelling behind the ear. For three nights the boy has been unable to sleep on account of the pain.

On examination, the left auricle was projecting markedly and over the region of the mastoid tip the swelling appeared to be pointing. The left meatus contained much pus, and on clearing this away granulation-tissue was observed. Temperature 100.4 F., pulse 120.

Functional Examination: Cochlear Apparatus.—Raised voice heard at only 6 in. by left ear, and with the noise-box in the right ear patient can only hear the raised voice *ad concham*. Weber lateralised to the left. C32 to C256 not heard by left ear. *Vestibular apparatus*.—Slight spontaneous nystagmus to the right; no giddiness. Patient too ill for rotation and caloric tests.

May 20, 1915: Radical mastoid operation left ear (J. S. F.). Large foul-smelling subperiosteal abscess opened. Mastoid cortex eroded. First gouge-cut released a quantity of foul pus. Perisinus abscess present. Sinus covered with granulations. Dura of posterior fossa internal to the sinus appeared normal. Antrum and aditus contained cholesteatoma. Malleus and incus absent, or, at least, not found. Tym-

panum contained granulations. Radical operation completed. Cold lotion applied to inner wall at end of operation at once produced conjugate deviation of eyes to the right. Posterior wound closed. May 25: No fever since operation. Posterior wound healed. All stitches removed to-day. Cavity looks satisfactory. June 13: Patient dismissed to convalescent home. June 29: Doing well.

CASE 12: *Synopsis*.—No. 362. J. M.—, male, aged sixteen, first seen January 25, 1916, C.O.M.S. (right). For five days before admission headache on right side, with shivering and vomiting. Labyrinth healthy. *First operation* (radical mastoid).—Cholesteatoma present: large extradural perisinus abscess (*Staphylococcus aureus*). Sinus split up, but jugular not ligatured. Later, pain developed in right lumbar region; exploration of chest negative. *Second operation*.—Ligature of internal jugular; intravenous injection of eusol; marked tenderness over right ilium: incision here evacuated pus (*Staphylococcus aureus*). Fever continued. Operation on right ilium by general surgeon (Mr. J. W. Stuthers). Large abscess between inner surface of ilium and iliacus muscle. Recovery. (Case recorded in full in *Brit. Med. Journ.*, 1917, Pt. I, p. 358.)

CASE 13: *Synopsis*.—No. 269. M. S.—, female, aged thirteen, first seen January 14, 1915. C.O.M.S. (right) after measles: for one week fever, earache, vomiting and retraction of head: meningitis present on lumbar puncture. *First operation* (radical mastoid). Later, symptoms of septic sinus thrombosis developed. *Second operation*.—Sinus opened and right internal jugular vein ligatured. Later still, symptoms of cerebellar abscess. *Third operation*.—Cerebellar abscess opened and drained. Recovery. (Case recorded in full in *Edin. Med. Journ.*, November, 1915.)

(To be continued.)

PHARYNGEAL DIVERTICULA, WITH NOTES OF TWO CASES: IN ONE THE POUCH WAS REMOVED UNDER LOCAL, IN THE OTHER UNDER GENERAL ANÆSTHESIA.¹

By W. H. KELSON, B.S.Lond., F.R.C.S.Eng.

COMMENCING this paper with a short historical survey, I note that Mondiere (1) in 1833 described these pouches, and Rokitansky in 1840 classified them. Zenker (2) followed with an important paper in 1878, and Wheeler (3) reported a case in which the sac was excised in 1886. Richardson (4) in 1900 collected fifty-six cases. Rosenthal (5) has an important article in 1902. Kocher (13) reported cases in 1902. Halstead (6) gives a good account in 1904. Grant (7) in 1905 showed a radiogram of a pouch which he afterwards removed. Robinson (8) has a case in 1910.

Early classification divided pouches into (1) pressure, (2) traction pouches, according as to whether they were due to pushing or pulling, but it is only with the former that we are concerned.

Also it was the wall of the œsophagus itself which was formerly supposed to give way, but later investigation has shown that it is not in the œsophagus nor even between the œsophagus and hypo-pharynx that the protrusion takes place, but in the hypo-pharynx between the upper and lower segments of the inferior constrictor muscle. Hence the term "pharyngeal" has been substituted for "œsophageal" diverticula. In the great majority of cases the opening is by a transverse slit in the middle of the posterior wall of the hypo-pharynx opposite the body of the cricoid; the pouch generally deviating to the left as it passes down. Formerly, the signs and symptoms most relied on in making a diagnosis were—return of portions of undigested food hours or days after its ingestion, gurgling and eructations of gas from the throat, especially when pressure was made on the left side of the neck, also bulging in the neck low down, particularly after the taking of food. Many cases of pouch

¹ Read at the Summer Congress of the Laryngological Section of the Royal Society of Medicine, May 2, 1919.

were diagnosed as malignant disease of the œsophagus, and gastrostomy performed under this impression. But when these persons did not die as they should have done in due course according to rule, suspicions that a mistake had been made arose. Later, however, the X rays with a bismuth meal and œsophagoscopy illuminated the situation immensely, the typical shadows of the former shaped like a retort with a very much bent neck instead of goblet-shaped as in stricture being very striking. But somewhat curiously the assistance of these valuable methods was at first but little sought: for instance, Stetting, writing about his case in 1910, says, "I decided to dispense with the œsophagoscope as I deemed it unnecessary, and did not wish to subject the patient to the risk and great annoyance"; though a notable point to my mind about œsophagoscopy in these cases is the extraordinary ease with which the tube enters the sac—in fact we can hardly avoid entering it, though the opening leading to the œsophagus may require tedious search. The X rays were only called in in the above case because the patient, who was supposed to have carcinoma, did not die.

Treatment.—When operation is declined or contra-indicated, something in the way of palliation may be done by emptying the sac, keeping it clean and passing the œsophagoscope and a feeding-tube. Also patients get to know little tricks for facilitating the passage of food and relieving themselves of the undigested residua, and sometimes a sort of truss may be fitted and helps. As regards operative procedures these may be divided into two kinds: (1) those that do not require external incision; (2) those that do.

As regards (1) Chevalier Jackson (9) in 1915 says: "I have devised a method of seizing the bottom of the sac and drawing it up and cutting it off, but have not yet come across a suitable case. In the two in which it was tried spasm of the glottis was set up—a result due no doubt to pulling on the recurrent laryngeal nerve."

Mosher (10) reports three cases in which he divided the adjoining walls of the œsophagus and sac with success, but the statements which he himself made must be well noted, for he says mediastinitis is more deadly than either peritonitis or meningitis; and further on, if the œsophagus and pouch be not actually glued together by old inflammatory adhesions the mediastinum will be opened by the first cut.

(2) *With External Incision.*—The operative side of these cases seems in the early days to have been approached with fear and trembling. Even Butlin (14), writing in 1893 in reference to his first case, speaks of the gloomy outlook of the patient, though he afterwards excised the sac and cured him. In 1903, however, when he reported eight cases of incision with one death, he took a more favourable view.

He emphasises the necessity of feeding the patient through a tube passed if possible through the mouth, disturbing the parts as little as possible, stitching up the wound in the pharynx but well draining the wound in the neck.

Although Stetting's (11) tables give a high mortality, viz. nine deaths in fifty-three cases in which the pouch was excised, yet on closer examination a good many of these deaths seem avoidable, *e.g.* one from hæmorrhage from the superior thyroid artery, another from inanition, another from injection of 1 in 100 perchloride of mercury.

Halstead (6) in 1904 points out the advantages of invaginating the sac into the œsophagus, and gives successful cases.

Waggett and E. D. Davis (16) record an interesting case in 1912 in

which the sac was invaginated into the œsophagus, and ten months after recurrence took place during sneezing and excision was successfully performed.

Hill (15) showed a case at the Royal Society of Medicine in which he had drawn up the sac and stitched it to the inferior constrictor muscle, and Grant one he had treated in a similar fashion in 1919, with excellent results so far. The name "diverticulopexy" given to this operation is a rather notable scintillation which I believe we owe to Dr. William Hill.

Judd (11) in 1918 advised the operation of excision and sewing up of the neck in two stages, and Bevan's operation, in which the sac is folded up and invaginated, as the safest.

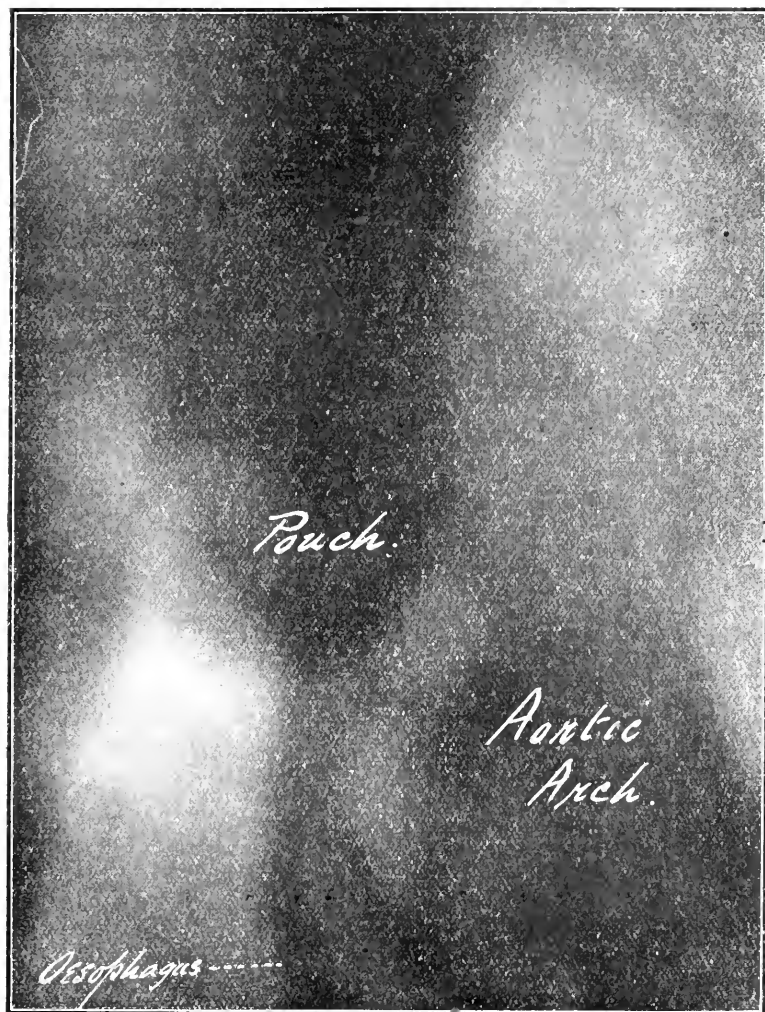


CASE I.—Pouch after removal: well-marked shrinking has taken place.

From the Mayo (12) clinic as recorded in the *Journal of the American Medical Association*, 1918, we get a list of 35 cases with two deaths from heart failure. The very great majority of these 35 were excisions.

After carefully considering these different methods of dealing with diverticula, I cannot help feeling that some of them, though ingenious, and especially the invagination operation, remind one of the device of the man who, when asked how he got a tight cork out of a bottle, replied that he did so by pushing it in. If the patient finds himself perchance in the hands of one who is not only an œsophagoscopist but also a surgeon so much the better for him. He will probably escape tinkering methods of dealing with his case on the one hand, and on the other the very doubtful advantage of the dual control of a separate surgeon and œsophagoscopist, each with his separate retinue and paraphernalia, as

recommended by Chevalier Jackson. And in conclusion I find that the dangers of the operation of excision of the sac as performed by that great surgeon and laryngoscopist, the late Sir Henry Butlin, have been much exaggerated, and I believe this to be still the best method, and I offer



Radiogram showing pouch extending down into the thorax to the level of the top of the aortic arch. CASE 1. - Pouch removed under local anesthesia.

the following two cases as a very small item in support of this contention. I would also emphasise just a few points besides those advised by Butlin, especially the desirability of cleansing the patient's mouth and the sac, and keeping a bougie in the sac as a guide during the first part of the operation.

CASE 1. G. W. —, aged seventy, cabinet-maker, first seen in November, 1913, when he came to the hospital with the diagnosis of cancer of the throat. There was a history of difficulty in swallowing and regurgitation of food and gas for over two years, and of a variable swelling in the lower part of the neck on the left side. The patient was much emaciated, and appeared to be rapidly going down hill. Examination with the oesophagoscope and an X-ray photograph after a bismuth meal showed the presence of a large pouch. The opening leading into the hypopharynx was found after considerable search, and examination of the oesophagus demonstrated the absence of stricture below. The patient being both tolerant and intelligent, I decided to operate under local anaesthesia, thinking it would be a great advantage to avoid post-anaesthetic vomiting, so on December 3, 1913, after cleaning out the pouch, a solution made from three tabloids each containing cocaine $\text{mur. gr. } \frac{1}{2}$, morphia $\text{mur. gr. } \frac{1}{10}$, was injected subcutaneously along the anterior border of the sterno-mastoid muscle from the hyoid downwards, and a gum-elastic bougie was passed down from the mouth into the pouch, so that its extremity could be felt in the neck. An incision was now made along the sterno-mastoid, and the platysma and deep fascia divided, also the omo-hyoid muscle, but not, however, the superior thyroid artery. The pouch was now made very manifest by means of the bougie, and was found to extend down into the chest; it was carefully separated and drawn up, exposing its neck, the bougie having been previously removed. The neck was now held and a feeding-tube passed easily from the mouth into the oesophagus. An anchoring suture was passed through the neck of the sac, and a little more distally a pair of forceps applied as a clamp, and between these the neck was divided and stitched up with two layers of interrupted catgut sutures. The wound in the neck was well drained. The patient suffered from a very troublesome cough, and a slight leakage took place after a paroxysm on the fifth day; this, however, closed in a few days, and the patient gained strength, and left hospital at the end of January, swallowing quite well, and with the wound healed. The radiographer, Dr. Jordan, now reported all clear. In April, 1914, he was shown at the Laryngological Section meeting. In 1917, nearly four years after the operation, he reported at hospital, and seemed quite well, having gained three stone in weight and swallowing without difficulty. On examination with the oesophagoscope only a slight puckering was visible at the site of the diverticular opening.

CASE 2. — P. W. —, aged seventy, seen at the end of April, 1914, in consultation with Mr. Woakes, who also assisted me at the operation. The patient was a feeble and emaciated man, tired out by the constant regurgitation of food, drink and gas, and was sleepless, irritable and depressed: he had, however, plenty of pluck. The case was suspected to be one of pharyngeal pouch, and this was confirmed by oesophagoscopy and radiogram. The patient having been anaesthetised, the pouch was removed as in Case 1. A feeding-tube introduced during the operation was, however, badly borne, the patient being very restless, and it had to be finally removed on the sixth day. In this case also slight leakage took place after vomiting. This did not seem to delay recovery, and it would appear that a small leakage coming on late—that is, after the parts have had time to consolidate—is of very little importance. The patient went on well after the first ten days, and left the nursing home on May 27, swallowing well, and rapidly gaining weight and strength. Inquiry in March, 1919, five years after operation, elicited the reply that he was able to go out and about and swallow all right.

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CLINICAL NOTES.

ARYTÆNOID STRIDOR.

By DAN MCKENZIE.

RECENTLY, while examining a boy, aged ten, by suspension laryngoscopy, I saw and was able to demonstrate to those who were present a curious laryngeal condition which I have not yet seen anywhere described.

The patient was under chloroform, and after he had been arranged with the tongue spatula and epiglottis elevator in position a peculiar purring stridor was heard during inspiration, and on looking into the mouth the cause of the sound became evident in the vibration of two long, curved, conical, almost horn-like arytaenoid eminences. With each inspiration they fell together, being aspirated upward (in the position of the patient) and inward, blocking the laryngeal orifice, and altogether obstructing the view of the interior of the larynx. The examination indeed could not be carried out until a pair of Paterson's forceps had been inserted between the flaccid eminences and opened so as to keep them apart. The snoring noise ceased as soon as the airway was thus cleared.

I am unable to say whether it was the presence of the flat epiglottis retractor that pulled the arytaenoids forward, but when the instruments were removed from the mouth the boy's breathing became quite quiet and free from any adventitious sound.

His mother, on being questioned, stated that he had never had any signs of stridor in infancy. As a matter of fact, it is to be noted that the appearances described above are not those seen in congenital laryngeal stridor, in which it is the aryepiglottic folds and lateral walls of the larynx that are sucked inwards. In the foregoing case the flaccid, horn-like arytaenoids flapped over forward and came into contact with each other along their internal borders thus blocking the orifice of the larynx.

It is perhaps not *mal à propos* to add that I have occasionally also seen stridor produced by a long epiglottis pendant over the larynx and in contact with the posterior pharyngeal wall, the sound it produced being indistinguishable by ear from the rough snore of the vibrating soft palate and uvula, and the question occurs to one whether ordinary snoring may not be sometimes due to a pendant epiglottis.

Snoring at any age is, of course, an abnormality, and, indeed, an indication of obstruction to the inspiration; that is to say, it increases the amount of work to be done by the muscles of inspiration, and in aged and weakly persons this may be a serious factor.

ORAL DISINFECTION IN THE OPERATION OF TONSILLECTOMY AND ADENECTOMY.

By C. G. RUSS WOOD.

For the past two years I have been in the habit of giving a pastille of hydrarg. subchlorid. gr. $\frac{1}{2}$, combined with formalin, every hour for three hours before the operation and beginning three hours after the operation every hour for six hours. The latter are repeated on the following four days at two-hourly intervals. The combination seems to have a more powerful local antiseptic action than formalin alone, with the added advantage of a purgative, which clears out the swallowed blood from the intestinal canal.

Considering the extremely septic mouths which we have to operate upon in hospital (and private) practice any measure which decreases the chance of septic absorption is useful.

Messrs. Wander have made for me a most excellent pastille under the name of "Formocal," which contains the above combination.

SOCIETIES' PROCEEDINGS.

ROYAL SOCIETY OF MEDICINE—LARYNGOLOGICAL SECTION.

February 1, 1918.

President: Dr. A. BROWN KELLY.

Demonstration on Rhinoplasty.

(Continued from p. 408.)

THE PRESIDENT: Besides the satisfaction of the surgical successes, it must be a source of gratification to those engaged in rhinoplastic work to reclaim for ordinary society men whose appallingly repulsive injuries would otherwise have condemned them to a life of isolation. When the war is over, and the cases requiring restorative treatment are rare, I hope that the experiences gained in this work will be utilised in forming a branch of our specialty which has been neglected by most of us. I refer to what has been termed "corrective rhinoplasty," which deals with noses that are healthy, but either by their abnormal size or shape cause disfigurement. At first this subject might seem too unimportant to be worth serious attention, but on glancing at the literature one cannot but be struck with the variety of conditions requiring treatment, and the excellent results obtainable.

SIR STCLAIR THOMSON: Are these instruments inside the nose for keeping it up successful, or have they, in some cases, proved failures? We might have to try them for accidents to the nose arising in the football field or at boxing matches. In reference to the lining of the nose, I think it was said that if one does not get epithelial lining the nose contracts. Apart from that, does much difficulty arise from the absence of ciliated epithelium? Do these noses which are lined with ordinary mucous membrane, *i. e.* grafts of mucous membrane, keep moist? Or do the patients get rhinitis sicca, or ozæna, or crusts inside the nose? In cases in which I have had to remove the turbinates entirely for malignant disease of the ethmoid region, as I have reported here before, I have been astonished that the patients have remained free from ozæna or atrophic rhinitis—a condition we used to anticipate in those cases. That experience has made me think that atrophic rhinitis is much more a pyogenic result than one of difficulty or defect of turbinate tissue and ciliated epithelium.

MR. HERBERT TILLEY: In the case of a slight dent or depression following a submucous resection, do the exhibitors recommend the insertion of a portion of septal cartilage from another patient, or the removal of a small portion of rib cartilage from the same patient?

MR. H. D. GILLIES (in reply): In reply to Sir StClair Thomson, I have not seen any case of atrophic rhinitis resulting from these injuries of turbinals or the measures taken for the repair of the nose. One point in connection with complete rhinoplasty is interesting from the voice-production point of view. One of the officers I showed lost a good part of his nose, as well as a portion of his superior maxilla, and it did not matter whether he had no nose, or whether Mr. Hett had moved his turbinals, or whether I had re-made his nose, he had the same nasal resonance, and his smell was normal from the beginning. I have not seen any case of atrophic rhinitis among these, and there is a possibility, if other methods are not available, that skin-grafting in the nose might be the means of curing atrophic rhinitis. Skin in the nose used as mucous membrane, as also in the mouth and in the eye-sockets, does admirably in my experience: it causes no trouble of any character. What it becomes histologically is not, I think, yet established, but from a practical point of view it is very satisfactory.

MR. G. SECOMBE HETT (in reply): With regard to Mr. Tilley's question as to autogenous *versus* heterogeneous grafts in the nose, I think he spoke entirely of the septal cartilage graft. Both have been tried, the septal cartilage in the autogenous and the heterogeneous manner, that is to say, grafting one person's septum into his own nose, and also into that of another patient, and that, so far, has proved satisfactory. With regard to heterogeneous costal cartilage grafts, Mr. Gillies knows about those better than I do. I have thought there was not so much vitality about the heterogeneous as about the autogenous grafts. With regard to Sir StClair Thomson's question, I do not know whether he includes unhealthy conditions, such as sinus disease or atrophic rhinitis, when speaking of the interior of the nose, but I appreciate the extreme necessity of making the cavity healthy before putting on a new nose: for instance, in one case, a man had a chronic antral condition: a new nose was brought down, and had to be lifted off again and the antra cleared out because the nasal cavities were full of putty-like material, and both antra had foul pus in them.

New Laryngotomy and Tracheotomy Tube.—A. L. Abel.—This is a modification of Fuller's bivalve tracheotomy tube. The difference is that one limb of the valve has been lengthened $\frac{3}{16}$ to $\frac{1}{16}$ in., and the concave border of that prolongation has a scalpel edge. The object is to render the time-interval between the tracheal incision and the insertion of the tube *nil*. The method of use has been to make a small skin incision first, transversely or vertically, and, without anything further being done, the instrument is held between the thumb and finger, and by a slight rotatory movement the tube is carried into the trachea or larynx. After the tip of the smaller valve has passed the obstruction, which it does easily, the patient is at once heard to breathe, and the inner tube is then inserted. With this guarding the point, the instrument is driven home. The instrument fits its incision exactly, and there is no escape of blood or air. There is no need to drive it home, neither does it need tying. So far it has been used in fifteen or twenty cases of laryngotomy: for tracheotomy, only on the dead body. It has been employed in connection with operations on the jaw, throat, and tongue. It has been said that it might cause sepsis by healing up so rapidly: but the wound heals by first intention and is closed almost at once, and leaves no scar. No sepsis has been produced inside the trachea, and it has given gratifying results.

Epithelioma of Soft Palate and Uvula.—**Andrew Wylie.**—Male, aged thirty-eight, complained in October, 1917, of pain in the throat, and later of difficulty in swallowing, with slight cough and spit. Dr. Russell (Maidstone), saw him in November, and administered potassium iodide and mercury, after tuberculosis had been excluded.

Patient attended Hospital in December and there was marked symmetrical ulceration of the soft palate, extending to the tonsils. The uvula was also affected. The Wassermann reaction was *positive* and the appearance was similar to specific disease, but even large doses of anti-specific remedies had no effect. Chest normal; no tubercle bacilli found. Enlarged gland has appeared recently on the right side. A piece was removed, which Dr. Wingrave reports as typical epithelioma. I intend to treat the case by diathermy.

Frontal Sinus Suppuration; Suppurative Meningitis for Fourteen Days; Operation; Recovery.—**W. M. Mollison.**—B. S.—, aged twenty-nine, was admitted to Guy's Hospital in July, 1917, on account of acute frontal sinus suppuration in the site of a previous operation. The man had previously had over thirty operations of the nose and both frontal sinuses, all in a provincial hospital except the last, which was in Guy's in December, 1916, when a thorough operation was performed on the left sinus; during his recovery from this, pain along the course of the left supra-orbital nerve was a prominent symptom. On admission in July, 1917, there was a red, tender swelling in the left supra-orbital region and considerable discharge of pus from the nose; operation was performed and pus found in the sinus; drainage into the nose was established and a rubber tube inserted; at the same time, as the nose was narrow, a submucous resection of the septum was performed. The man made a good recovery except that he complained still of pain along the supra-orbital nerve; he was discharged in August.

On September 27 he was readmitted on account of continued pain and nasal discharge. On October 1 the left sinus was again opened and more bone removed from the limits of the sinus and granulations gently curetted; a very thin fronto-ethmoidal cell was found far back over the orbital roof containing granulations; again a tube was inserted along the passage from the operation cavity to the nose and kept in place for ten days. After operation the patient's temperature at once rose to 100° F., and remained between 100° and 102° F. all through the illness. He was ill, complaining of slight headache, his mouth and tongue were dry and he was somewhat delirious at times. On the twelfth day after operation (October 12) he had a rigor and his headache became severe. Lumbar puncture showed cloudy cerebro-spinal fluid under increased pressure; the puncture was repeated daily for the next fourteen days, the needle being left in place each day for about two hours; it was impossible to keep it in longer as the man had so much pain in the back and legs.

Six days later (October 18) further operation was undertaken, as the meningitis did not appear to be getting worse and no organisms were found in the fluid, though it was crowded with leucocytes. The previous supra-orbital incisions were re-opened and joined by an incision across the bridge of the nose, and from the inner end of the left supra-orbital incision one was carried up on to the forehead for 2 or 3 in. Bone was removed to expose the dura mater over a considerable area; the bone showed small spaces containing granulations towards the root of the nose and the intersinus region; these granulations led the operation as

it were to the right side, which was found to contain beads of pus. When the bone had been removed between the sinuses just above the root of the nose, a small vessel was seen standing out as a strand between the dura mater and the nose: this vessel was taken to be the most anterior part of the superior longitudinal sinus, and as it had been surrounded by septic bone it was considered to be a possible source of the meningitis; it was therefore ligatured in two places and the intermediate piece removed for section; microscopical examination showed it to be a vessel with an organising thrombus (this is shown). The dura mater over the whole area was normal in appearance, and the superior longitudinal sinus showed no sign of thrombosis higher up.

After operation the patient at once improved, the headaches ceased and the temperature came down, and the cerebro-spinal fluid soon became normal. Finally on November 20 the skin-flaps were adjusted.

Dr. DAX MCKENZIE: The case is interesting because of the question which arises as to how the meningitis was produced, presumably by this thrombosis. I think it is the first case in which a thrombus has been discovered in the operation for frontal sinus trouble. I would like to enter a caution against the use of the term "suppurative meningitis," which is conventionally limited to cases in which bacteria are found in the cerebro-spinal fluid. In this case I do not think they were found; consequently it belongs, strictly speaking, to what is called "serous meningitis." The difference in the prognosis between these forms is very great, and that is where the nomenclature is important. This case may come into the category of milder meningitis cases, but all the same the result of the treatment is certainly a matter for congratulation.

Mr. MOLLISON (in reply): The little vein in the section shows thrombosis in the lumen, and outside shows chronic inflammation. I think the inflammation may have been going on in this vein since the submucous resection was performed, three months before the man developed the meningitis.

Calculus of Tonsil.—C. H. Hayton.—D. C——, aged thirty-five, an Italian patient, was sent to hospital with suspicion of a calculus in the tonsil. The patient complained of irritation at the back of the tongue, with a constant desire to swallow. An examination of the mouth revealed an enlarged red bulging left tonsil quite in contrast to its fellow on the opposite side. At first sight it simulated a peritonsillar abscess, but the readiness with which the patient opened his mouth and the absence of pain precluded the possibility of a quinsy. A small white spot was noticed on the tonsil. A probe elicited the stony hardness of a calculus. With local anaesthesia the stone was readily removed. It is a pyramidal-shaped stone, the base measuring 2.7 cm., altitude 2.2 cm. and thickness 1.8 cm., and the weight 7.9 gm. No examination was made for the *Leptothrix buccalis*. From appearances it is composed of phosphate and calcium carbonate.

The PRESIDENT: I suppose that Mr. Hayton, in mentioning leptothrix, has in mind the view that these calculi may develop around leptothrix filaments in crypts, but I think such an occurrence extremely unlikely. Leptothrix is abundantly present in the mouth, and the caseous masses in lacunar tonsillitis swarm with them, yet calculi of the tonsils are very rare. Many years ago, when trying to show that what was then termed *Mycosis leptothrixia* was a keratosis, I planted an excrescence of keratosis from a patient in one of my tonsillar crypts to see if a mycosis would develop, but with negative result. Long afterwards pus began to

come from my tonsil, and one day while squeezing this out a tiny calculus came away. There is little doubt as to its having formed around the excrescence. A foreign body probably in most cases forms the nucleus of a tonsilloolith.

Tumour of the Epiglottis.—**W. Jobson Horne.**—The patient was present at the meeting of the Section on December 7, 1917. The tumour was then described as a cyst of the epiglottis. Subsequently it was further examined and found to be a solid tumour. A portion was removed for microscopic examination and reported to be a round-cell sarcoma. The use of radium has produced a most satisfactory result.

Dr. JOBSON HORNE (in reply to a remark by the President) : I would like to show the microscope specimen at a future meeting, with a view of obtaining opinions upon the nature of the growth. The term "sarcoma" appears to me to be too comprehensive.

Laryngo-fissure.—**A. L. Macleod.**—**W. B.**—, aged fifty-five, engineer. First seen on May 16, 1917. Complained of hoarseness, lasting eighteen months; no cough; no difficulty in swallowing; abstainer, moderate smoker. On examination a nodular growth was found on the anterior third of the right cord, which was fixed. Patient was seen on May 21 by Sir StClair Thomson, who advised operation, with reservation on account of (a) length of case, (b) fixation of cord, and (c) possible invasion of cartilage. On May 25 a Wassermann test proved negative. On June 6 a laryngo-fissure was performed, Dr. Irwin Moore kindly assisting. Recovery was rapid and uneventful. *Pathologist's Report* : "Section shows a typical extensive epithelioma."

Sir STCLAIR THOMSON : I have a drawing which will show the extent of the growth in this case before it was operated upon. It should be one of our objects to show how these epitheliomata can be treated, for unfortunately, in the provinces and elsewhere, they have hitherto been left in the hands of the general surgeon, with disastrous results. To-day I received a letter from America, showing that they suffer over there in the same way.

Orbital Tumour.—**J. Gay French.**—The patient, a widow, aged fifty-eight, by occupation a dressmaker, stated that about nine years ago she first noticed a bulging of the left eye. This condition continued until about eighteen months ago, when the eye began to water, and she then felt some pain in the eyeball.

She first came under my care on November 1, 1917, when it was noticed that the left eye was displaced, and that there was a definite bulge above the inner canthus. There was no diplopia, and an examination of that eye with an ophthalmoscope revealed nothing abnormal. The swelling was soft and fluctuating, but on deep pressure a definite bony mass could be felt. An examination of the nose revealed nothing abnormal beyond the fact that the left middle turbinal was slightly enlarged.

An X-ray plate was taken, and it shows definite thickening on the upper and inner side of the orbit. This extends also into the ethmoidal region. Transillumination showed the left frontal sinus dark.

Within the last month the growth has definitely increased in size.

Mr. HOWARTH : This is a mucocele of the ethmoid and left frontal sinus. I have seen about eight cases. In some the ethmoid alone is involved; in some the frontal sinus alone; in one both frontal sinuses were affected and one ethmoid, so that one could get fluctuation from the right frontal sinus to the left ethmoid. The duration of this case—nine

years—is not unusual. One of mine was of seventeen years' duration. I think if Mr. French were to cut down on that, he would find the bony tumour was involving the ethmoid and possibly the left frontal sinus, and that if he drained it into the nose the eye would go back, and the patient would be cured. The contents in these cases vary a good deal: sometimes there is thick mucus, sometimes inspissated pus. Usually the contents are sterile, but sometimes they contain bacteria.

MR. O'MALLEY: I think this a mucocele, but it is difficult to say whether it is connected with the ethmoid or with the frontal sinus. If I were called upon to deal with it surgically, I should not think of attacking it merely from the front aspect where it is presenting above the inner canthus, because, as has been pointed out, sometimes these mucoceles are connected with the frontal sinus back wall, the sinus may be absorbed, and thus one gets sepsis and meningitis. I think this should be opened over the point where it is presenting, and then be connected freely with the ethmoidal region, after taking away the middle turbinal, so that there is a safe way into the nose for free drainage.

SIR STCLAIR THOMSON: In my text-book there is a photograph of a case very like this, but more exaggerated. That patient was a medical man, and the frontal sinus was full of the gelatinous sort of material which Mr. Howarth described. Dr. Logan Turner has pointed out the non-necessity, indeed the danger, of being too operative in these cases. As Mr. O'Malley says, you may only stir up sepsis, and sufficient has been done so long as you secure good drainage into the nose.

MR. GAY FRENCH (in reply): I am going to operate on the case next week, and shall try to effect drainage into the nose. I hope to report the result to the next meeting.

Three Cases of Symmetrical Nodules of the Vocal Cords.—

E. D. D. Davis.—CASE 1: A doctor's widow, aged thirty-eight, of no occupation, complained of hoarseness of six weeks' duration. She was neither a singer nor voice-user, and had neither cough nor any other symptom apart from hoarseness. The larynx shows typical, symmetrical, pale, small "singer's nodules" on the anterior third of both vocal cords. No adequate cause for the condition can be found.

CASE 2: A female munition worker, aged twenty-six, attended the hospital for hoarseness of twelve months' duration. Symmetrical reddish nodules, about the size of a small peppercorn, can be seen on the anterior third of both cords. The patient has a dry cough, but is not a voice-user. The nose is normal. When she was first seen there was slight pharyngitis.

CASE 3: A stage-hand, aged thirty-two, first seen in December, 1916, suffering from left frontal headache, with nasal catarrh and chronic laryngitis. There was considerable oral sepsis, and after dental care the œdematous left middle turbinal was removed, and the septal deformity corrected by a submucous resection. There was no sinus suppuration. The nose improved, but the chronic laryngitis remained. The patient had frequent mild attacks of bronchitis with persistent cough, but repeated examination of the sputum and chest did not reveal pulmonary tubercle. Alcohol was forbidden. In April, 1917, symmetrical œdematous projections, resembling singers' nodules, developed on the anterior third of both vocal cords, and have not disappeared in spite of treatment.

Symmetrical Ulceration of the Vocal Cords.—

E. D. D. Davis.—A woman, aged forty-seven, was first seen in April, 1916, and complained

of gradual loss of voice of three months' duration. An examination showed symmetrical ulceration, with formation of granulation-tissue on the anterior third of both vocal cords. Repeated examinations of the sputum and chest were negative. Weight constant; Wassermann reaction negative, and there is no history of syphilis. The condition has remained unaltered in spite of varied treatment.

MR. HERBERT TILLEY: Some of these patients do not make any particular use of their cords, and it is just possible we may have to give up the idea that these vocal cord nodules are all caused by excessive use of the voice. I have seen cases in young children who have not been particularly vociferous either indoors or in the playground, and I have seen them in adults who, even in reply to leading questions, could not admit there had been undue use of voice. I presume Mr. Davis will treat them in the usual way—that is, if they do not get well after prolonged rest, that he will apply the point of the galvano-cautery, and by the indirect method.

SIR ST. CLAIR THOMSON: These are very interesting cases, because I have been puzzled by singers' nodules occurring in people who are neither singers, nor orators, nor shouters. Some I have found had a deaf mother or other relative, and the shouting needed may have been the cause of it. With regard to the case of symmetrical ulceration of the vocal cords, I have watched such a case three or four years and tried to get at the cause—whether syphilis, tubercle, nose trouble, tobacco, alcohol—but found nothing to account for it.

DR. JOSEPH HORNE: During the past year I have seen several similar cases. With regard to treatment, I am not in favour of an application of the galvano-cautery to the vocal cords straight away: they seem to get all right with rest of voice and a general improvement in health. Hospital patients more slowly recover robust health and find it more difficult to rest the voice; this probably accounts for the persistence of the condition in some cases. In the last case I could not see ulceration of the vocal cords: the condition seemed to be similar to that in Cases 2 and 3, but in a more acute stage. It would be instructive to receive a further report upon this group of cases.

MR. FRANK A. ROSE: One feature common to the first two cases of symmetrical nodules of the vocal cords is the high degree of laryngitis which is present: there is swelling and redness of the mucous membrane and of most of the interior of the larynx. That is much more intense and conspicuous than is usual in cases which one calls singers' nodules. I do not recall a case of the latter, in a schoolmistress, for example, in whom there was this degree of laryngitis.

THE PRESIDENT: The interesting question about nodules is their aetiology. I agree with Mr. Tilley that while they usually occur in those over-using or abusing the voice, such as school teachers, freak singers, etc., they are also found in young children. The cause probably lies in the manner in which the cords are pressed together, possibly owing to the action of the external thyro-arytenoids. These nodules develop where maximum contact takes place, in the middle of the ligamentous part of the cord. They are usually epithelial hypertrophies, sometimes granular. I think there is no better way of treating the very small nodules than by lightly touching them with the cautery and then drawing it away. Some members of the Section are very averse to this method.

MR. E. D. D. DAVIS (in reply): I am much indebted to members for their suggestions as to the pathology and treatment of these conditions. I am sorry the first case did not come, but it was a typical case of

symmetrical nodules on the vocal cords, known as singers' nodules, but which I have called "symmetrical nodules." The patient in the second case has a recent cold, and the laryngitis now present has developed since I saw her last. When I first saw her the larynx showed singers' nodules, but the nodules were red and inflamed. The last case has altered recently too, but there was no doubt about the presence of ulceration. I have treated it by removing the granulation-tissue and applying tincture of iodine, and the ulceration is now healing. One occasionally sees such a case as this where there is no evidence of either tuberculosis or syphilis, and which does not respond to treatment. She has been attending since 1916, and is only just beginning to improve.

Tumour of the Nasopharynx.—**W. Stuart-Low.**—A man who for two years has suffered from nasopharyngeal obstruction. In the nasopharynx there is a large, red, firm and pendulous swelling which has a broad base and is attached to the roof of the cavity. It is very firm to the touch, and has occasionally given rise to hamorrhagic discharge, although not profusely. It is proposed to remove this tumour, and I shall be obliged if members will give their opinion of their experience of the best method of doing so.

Mr. TILLEY: My impression of this case, after a cursory examination, is that it is a choanal polypus, with a congested lower border seen below the edge of the soft palate. By watching the tumour while the patient moves his palate one sees the growth move very freely, and I do not think it would do this if it were a fibroma attached to the base of the skull. On looking into the right nasal cavity one sees what appears to be a polypus. Furthermore, by digital examination I found there was a smooth mass passing into the posterior choana.

The PRESIDENT: If I had seen only the growth in the nasopharynx I should have hesitated to offer an opinion, having been deceived several times with such. But the polypoid condition in the right nostril indicated the nature of the growth. There seems to be no doubt about its being a naso-antral polypus. A good specimen can be obtained by using a bent snare, passing the loop up behind the soft palate, gripping the growth and tearing it out, when the naso-pharyngeal and nasal portions together with a cyst from the antrum will come away *en masse*. Smaller naso-antral polypi are easiest removed by Lange's hook.

Mr. W. STUART-LOW (in reply): I have not seen the case for two months, and when I last saw it it seemed to have the characters which I have described here. It is a very unusual case. The whole thing is a mass of redness, and it is different from any choanal polypus I have seen or felt.

Shrapnel Embedded in the Neck.—**W. Stuart-Low.**—A soldier wounded in France four months ago. Subsequent treatment by partial closure of the glottis and trachea, which necessitated tracheotomy and a re-insertion of this tube some weeks after its removal and still demands its retention. There are still small pieces of shrapnel lying in the tissues, embedded deeply beside and behind the larynx and trachea, as seen in the skiagram shown, and I am anxious for an expression of opinion from those having practical experience of such cases as to whether or not I should cut down and remove these fragments. The man complains of occasional pains in the neck.

Case of Double Lacrymal Stenosis; Right Side successfully treated by Internal Dacryocystotomy (West's Operation).—**James**

Donelan.—The patient, a boy, aged eleven, had suffered from epiphora for several years owing to lacrymal stenosis. For this two external operations, of which the history is unknown, had been tried over two years ago. The result was apparently not good, as the skin over the lacrymal sac on both sides was in approximately the same condition as may still be seen on the left, when he was sent to my department at the Italian Hospital by our oculist, Mr. Stanford Morton, with the suggestion that I should attempt the internal operation. This was done on November 8, 1917, the details of West's operation being carried out as nearly as possible according to the description in Sir StClair Thomson's book. The result appears to be so satisfactory that it is now intended to attempt the other side in the hope that if a lacrymal sac is still present, which there is some reason to doubt, a similar result may be obtained. The great difficulty of the procedure in so small a space was in making sure that one had got hold of the lacrymal sac before using the scissors.

Thyrofissure and Removal of Right Cord six years after Operation.¹—**G. C. Cathcart.**—W. L.—, male, was sent to me in September, 1911, with the following history. He was aged sixty-three, and complained of fatigue and hoarseness of the voice. He had had this for three years on and off and said it first came on after a long and tiring motor drive; for the last six weeks it had been continuous. On examination there was a small pedunculated tumour growing from the junction of the anterior and middle two-thirds of the right vocal cord. I removed this with Mackenzie's forceps and sent it for microscopic examination; the report was as follows: "This small pedunculated tumour is a papilloma composed of thickened masses of squamous epithelium in a stroma of areolar tissue. The surface of the tumour is necrotic, and there is some inflammatory reaction at the base. There is no evidence of any tendency to infiltrate the pedicle, which is quite free from growth. We see no reason to regard it as malignant, but the case should be carefully watched."

His voice got much better for a week or two, but in November he complained of more difficulty in speaking. On examination the papilloma seemed to be growing again, and there was a little depression on the cord, as if it were being infiltrated. Dr. Greville MacDonald and Mr. Charters Symonds saw it with me in consultation, and we came to the conclusion that it was malignant. On December 25 I performed a thyrofissure, after doing a low tracheotomy. On opening the larynx, the growth, as generally happens, was found to be much more extensive than when examined by the laryngoscope. The whole of the cord and arytenoid cartilage was removed, the wound was closed up and the tracheotomy tube removed after a week. The patient did very well and left the home in three weeks.

The report on the growth removed was as follows: "The tumour is a squamous-celled carcinoma; the section shows the tumour mass invading the submucous structures, but there is no erosion of cartilage: the limits of the specimen are free from growth."

The peculiarity about the case was that six months before he came to me he had seen two other throat specialists who said he was only suffering from laryngitis, so that the papilloma must have grown very quickly. The patient has had lessons in voice production, and his voice is now very fair. Two years ago he felt so well that he married again.

¹ Reported at a meeting of the Section held December 7, 1917 (patient not present).

ABSTRACTS.

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Authors of Original Communications on Oto-laryngology in other Journals are invited to send a copy, or two reprints, to the JOURNAL OF LARYNGOLOGY. If they are willing, at the same time, to submit their own abstract (in English, French, Italian or German) it will be welcomed.

PHARYNX.

Researches on the "Entamoeba Buccalis" in Pharyngology and in Rhinology.—C. E. Benjamins. "Arch. Ital. di Otol.," May, 1919.

The so-called *Entamoeba buccalis* is found in normal mouths. It resembles in some respects the amoebæ normally found in the intestine. It is most commonly found between the ages of fifteen and thirty. Care of the teeth has very little effect on the presence or absence of the organism. Caries of the teeth has very little influence on the number of amoebæ in the mouth, but in pyorrhœa they are very much increased. Out of sixty tonsils examined Benjamins found the amoebæ ten times, namely, four times in diseased tonsils and six times in healthy ones. Thirty adenoid masses were examined with negative result. In the pus of twenty-three otitis media cases no amoebæ were found. Pus from twelve cases of maxillary antrum suppuration contained no amoebæ. From these results the writer concludes that the *Entamoeba buccalis* is not pathogenic.

J. K. Milne Dickie.

Case of Tonsillectomy in a Man Weighing 23 st.—F. E. Shipway. "Proc. Roy. Soc. Med.," June, 1919, Section of Anæsthetics, p. 18.

The patient was a man, aged fifty-two, and weighed a little over 23 st. He was of huge size, with a very short thick neck, much fat around the chin and angles of the jaws, a perfect set of teeth, and very large abdomen. He usually slept in a chair. The throat was irritable. The pulse was steady and full, arteries good, systolic blood-pressure 130; heart-sounds rather faint but nothing abnormal detected, and lungs healthy. There was no albumen or sugar in the urine.

It was decided that an attempt should be made to enucleate the tonsil under deep anæsthesia with a pillow under the shoulders, the head hyperextended, and the mouth widely open.

The night before the operation the patient was given 15 gr. of bromide, and next morning, three-quarters of an hour before the anæsthetic, $\frac{1}{4}$ gr. of morphine and $\frac{1}{160}$ gr. atropine. Induction was started with C.E. As soon as the stage of excitement commenced open ether was given. Respiration became noisy and the colour slightly cyanotic; this was quickly relieved by oxygen, and the administration was continued until the mouth could be opened by a wedge and a gag inserted.

A sterile rubber catheter attached to the warm ether apparatus was pushed down one nostril and a mixture of oxygen and chloroform with a little ether administered. Anæsthesia soon became moderately deep and of good quality; the last pillow was removed and the head was bent back as much as possible. The breathing at once became much embarrassed, and in spite of tongue-traction and of the jaw being held forward by a finger in the

mouth it was obvious that the operation could not be done in this position. The head was, therefore, brought into line with the body and the breathing immediately became quiet and easy and slow. Deep anæsthesia was then established, chiefly by means of chloroform; the eyes were fixed, pupils small, corneal reflex moderately brisk, pulse slow, regular, and of good tension, and the colour excellent. Pulling on the tonsil evoked no reflexes, and enucleation was successfully performed. Fortunately there was very little bleeding. Reflexes soon returned, and the patient made a very good recovery.

Archer Ryland.

Dental Brooch in the Throat.—T. G. Edwards and W. A. Edwards.
"Medical Journal of Australia," May 31, 1919.

During a dental manipulation the surgeon allowed the instrument to slip from his fingers and the patient swallowed it. A skiagram which is reproduced showed the position of the foreign body. The large end was in the recessus pyriformis, and the upper sharp end had penetrated the pharyngeal wall to a depth of 0.5 cm. Marsh removed it by the indirect method. The foreign body, 3.5 cm. long, was an ordinary hypodermic syringe needle.

C. H. Brady.

NOSE.

Nasal Obstruction in Aviators.—Douglas Guthrie. "The Lancet," 1919, vol. i, p. 136.

Douglas Guthrie summarises the effects of nasal obstruction on the aviator as—(1) *On the lungs*: The chest is never satisfactorily expanded or the lungs sufficiently aerated. Serious "oxygen want" results. (2) *Equilibration*: The Eustachian tubes are impaired in function, there is resulting alteration of labyrinthine tension, communicated from middle to inner ear by round and oval windows. The risk of a crash is, therefore, considerable. (3) *"Reflex" effects*. Headache, mostly due to pressure of deflected septum against the middle turbinal. The causes of nasal obstruction in aviators are adenoids, hypertrophic rhinitis, and septal deviations. Polypi were encountered by Guthrie only once. He insists upon the fact that *a degree of nasal obstruction which would cause little trouble on the ground may be very troublesome in the air*. The nasal mucosa becomes swollen and engorged at heights over 7000 to 10,000 feet. Treatment is therefore of some importance.

Macleod Yearsley.

The Bacteriology of Chronic Nasal Catarrh and its Treatment by Auto-genous Vaccines.—Leonard Mackey. "British Medical Journal," August 9, 1919, p. 159.

This paper is based upon the results of bacteriological examination in 558 cases of chronic nasal catarrh. Included under that heading are:

- (1) Cases of recurring acute attacks of nasal catarrh.
- (2) Cases of chronic nasal and post-nasal catarrh in which the presence of discharge is the chief complaint.
- (3) Cases of post-nasal catarrh in which the patient is unaware of discharge, but complains of its consequences, such as bronchitis, digestive disorders, feverish attacks, general ill-health, etc.

Single attacks of "cold in the head" and epidemic nasal catarrhs (influenzal, etc.) are not here considered, while chronic catarrhs associated with polypi, atrophic rhinitis or sinus suppuration are likewise excluded.

Most of the cases showed nothing abnormal in the nose.

In making cultures, a swab, mounted on finer wire than the ordinary throat swab, was passed along the floor of the nose to the nasopharynx.

It is of the utmost importance that cultures should be made as soon as the swab is taken. Delay may entirely alter the results, since important germs such as the *Pneumococcus* and *B. influenzae*, die quickly as the swab cools, while others, such as staphylococci, may actually multiply on the swab in the course of a day.

In health the nasal cavity may be sterile, but more frequently gives a few colonies of *Staphylococcus albus* and diphtheroid bacilli (*B. septus*, etc.).

Of the organisms capable of causing chronic nasal catarrh the *Pneumococcus* was by far the commonest. Next in frequency came *B. influenzae*. Those two organisms predominated over all others in the present series of cases. Pure cultures were obtained in 351 cases.

Routine examination of the nasal passages would be useful in many cases of chronic and inexplicable disorders. Chronic bronchitis is frequently of nasal origin and the causal organism may be obtained in pure culture from the nasal swab. Certain cases of neurasthenia and gastritis may also have their origin in the nose, for nasal infections are commoner and more important than pyorrhoea.

The writer claims good results from the use of autogenous vaccines in over 500 cases. In half the cases the catarrh was cured and the nasal cavity rendered sterile. Many other cases were cured of the discharge, although the organism was still present in the nose after treatment. In patients with secondary disorders, whether the catarrh was cured or only reduced, the general health was improved and the tendency to chills and "fugs" was lessened.

Vaccine treatment was not adopted for children, since chronic nasal catarrh in children is dependent upon adenoids, not necessarily so large as to cause nasal obstruction, and these should be treated surgically.

Douglas Guthrie.

Ivory Exostosis. Growing from the Roof of the Frontal Sinus into the Orbital and Cranial Cavities. Removed through an Osteoplastic Opening in the Cranium.—William Lang and Donald Armour. "Proc. Roy. Soc. Med.," June, 1919, Section of Ophthalmology, p. 16.

F. E.—, male, aged nineteen. When first seen (February, 1918) there was a displacement of the left globe forwards, downwards, and outwards, which had been noticed by the friends for six months, and diplopia had been present for three months. Vision = $\frac{6}{6}$ with Cyl. — 2 D $_{170}^{\circ}$; pupil normal, fundus normal. No limitation of movement. The roof of the orbit was depressed and felt hard. There was no pain nor discomfort.

A skiagram revealed a solid mass in the orbit.

The growth was removed by operation in December, 1918.

The patient's recovery was complete and perfect. The globe was in its normal position; no diplopia. Left vision = $\frac{6}{6}$ c cyl. + 0.75 D. $_{100}^{\circ}$;

binocular vision, no fundus change, no headache, and the patient appeared brighter.

The surgical problem in this case was one of operative approach. It was concluded that the best method was by an osteoplastic flap turned down in the frontal region. Such a flap was made with its base at the supra-orbital margin, turning down the scalp and bone together. The cranial portion of the tumour which was pushing up the under surface of the frontal lobe covered by dura was thus exposed. By pushing dura and brain gently back over the summit of the tumour, the whole extent of its cranial portion could be seen. It appeared to be fixed to the supra-orbital margin. The supra-orbital margin on either side of the tumour was therefore sawn through, but it separated cleanly from the tumour, and remained attached to the periosteum. The tumour was removed with chisel and hammer, the roof of the orbit, which was involved, being removed piecemeal by means of cutting forceps. The operation was completed by putting the wedge of supra-orbital margin back again, then replacing the bone flap and scalp, and stitching it up. There was uninterrupted recovery. The intra-cranial portion of the tumour was smooth, white, and ivory-like, while the other portion below the orbital roof was covered by mucous membrane.

This fact shows it must have been growing from the frontal sinus. There was no evidence at the time of operation that the frontal sinus had been opened. On the day following the operation, however, and for two or three days following it, the patient had an escape of blood from the nostril.

Archer Ryland.

Acute Suppurative Hypophysitis as a Complication of Purulent Sphenoidal Sinusitis.—T. R. Boggs and M. C. Winternitz.
"Johns Hopkins Hospital Reports," vol. xviii, 1919.

The following case is, as far as is known, the only one on record:

Woman, aged forty-three, admitted Johns Hopkins Hospital June 17, 1915, complaining of stiffness and soreness of neck muscles, headache, pain behind eyes, and tenderness of scalp. Illness began May 7, 1915, with acute coryza and aching all over. On May 20, 1915, had soreness of right side of neck. Throat felt full. Slight tenderness over mastoids. Examination of ears and throat negative at the time. No fever till May 29, 1915, when the temperature rose to 101° F., pulse 101, respirations 20, blood-pressure 135. Albumen and a few casts in urine. Improved a little after May 30, 1915. Had two attacks of severe pain in back and had varying degrees of pain in neck and scalp. X ray showed left antrum a little cloudy. On admission, June 17, 1915, temperature 103° F. Optic discs normal. Movement of eyes causes pain. Patient can be roused to answer questions. No paralysis. Nothing to note in chest or circulatory system. Kernig's sign absent. Later in day temperature 104° F. Leucocytes 11,600. Blood-sugar 0.243 per cent. Urine gave doubtful sugar reaction, which increased after patient had had two slices of bread to 2½ per cent. Acetone and diacetic acid strongly present. Orifices of nasal sinuses appeared normal. Antra and frontal sinuses illuminated. No optic neuritis. Cerebral abscess (?) or encephalitis (?) June 19, 1915: temperature 107° F., but rose later to 108.5 F. Comatose; death.

There had never been any convulsions or strabismus or ptosis. Cerebro-spinal fluid immediately after death clear. *Post-mortem* examination: Extravasation of blood over right frontal bone. Base of brain

covered with dark red friable exudate, which was very abundant over the roof of the fourth ventricle and round the chiasma. Smears showed staphylococci. There was a good deal of softening of the brain round the basal ganglia. Hypophysis seen as a dark red, very friable body. Pus exuded from sella. Nothing to note in rest of brain or ears. Thick pus in right sphenoidal sinus. Microscopic examination showed vessels and blood-sinuses round pituitary partly occluded by septic thrombi. Anterior lobe infiltrated with polymorphs. Large V-shaped infarct. Posterior lobe swollen and fissured. The points of interest are:

"(1) The entire absence of localising or neighbourhood symptoms in the central nervous system.

"(2) The presence of hyperglycaemia and glycosuria as possible evidence of involvement of the pituitary gland in a person previously not glycosuric and showing signs and symptoms of intracranial inflammation.

"(3) The normal appearance of the external orifices of the cranial sinuses does not exclude sinusitis of the severest grades.

"(4) The great importance of a thorough, competent X-ray examination in such cases."

J. K. Milne Dickie.

Three Cases of Interest in Rhínology.—H. Seward Marsh. "Medical Journal of Australia," June 7, 1919.

CASE 1: *Asthma due to Chronic Antral Suppuration*.—A man, aged fifty, subject to asthma for four years, had polypi and deviated septum in right nostril, and chronic antral suppuration same side and one polypus on left side. A submucous resection of septum was done, and the polyp removed. Two weeks later, under local anaesthesia, by submucous injection of opothesin (P. D. & Co.) in canine fossa, a radical Caldwell-Luc operation was performed on right antrum. The asthma had disappeared two weeks later. [Abstractor prefers in such cases to first treat the antrum, and get a clean nose before performing a submucous resection of septum.]

CASE 2: *Tooth in Antrum of Highmore*.—Patient had suffered for some years from a discharge of pus from a sinus above site of left upper wisdom tooth. The sinus was very minute. No wisdom tooth present. Skiagram showed what appeared to be a tooth far forward in left antrum. Antrum opened in canine fossa, and a tooth was discovered adherent to the mucous membrane lining the outer wall of the antrum, immediately internal to the opening in canine fossa. Marsh remarks that the condition is rare. He is of opinion that an unerupted molar tooth must have worked its way into the antrum, and become fixed there. Tooth removed. Caldwell-Luc operation.

CASE 3: *A Case of Vacuum Frontal Headache*.—Patient had suffered for some years from frontal headaches. Seldom free from them. At times almost unbearable. Treatment including correction of supposed refraction errors had afforded no relief. A high deflection of nasal septum to the right, pressing on the anterior end of middle turbinal was removed by submucous resection. Patient has had no headache since intra-nasal pressure was removed. Marsh is of opinion that this was a case of vacuum headache from blocking of the openings of the frontal sinus and anterior ethmoidal sinuses, following the theory of Sluder, who brought forward this hypothesis.

A. J. Brady.

Alar Collapse following Septal Abscess in an Infant.—David N. Husik.
 "The Laryngoscope," March, 1919, p. 166.

Husik reports the case of a female infant who five days after birth developed an acute coryza with mucoid discharge and some blood. There was no history of injury. The discharge increased and she developed a gastro-intestinal condition. When the child was seven weeks old the family began to notice that the anterior nares were closing in. When Husik saw the child she was nine weeks old, and appeared emaciated; anterior occlusion almost complete; mouth-breathing. There was a depression where the end of the nasal bones and soft parts meet. Examination showed a large cartilaginous perforation. A diagnosis of congenital lues was made, but Wassermann reactions taken on the child's father and mother came back negative.

Husik thinks the most probable explanation is that during the first few days of life while in a charity institution the child had a slight injury to her nose. Hematoma developed, and later suppuration with absorption of cartilage and perforation. The early pressure of hematoma and later of the abscess against the alae caused a paralysis of alar muscles, with consequent alar collapse.

J. S. Fraser.

LARYNX.

Case of Laryngo-fissure with Removal of Intralaryngeal Growth Performed under Gas and Oxygen—H. E. G. Boyle. "Proc. Roy. Soc. Med.," June, 1919, Section of Anæsthetics, p. 20.

The patient was a man, aged fifty. Preliminary alkaloid injection was given. He was anæsthetised with gas and oxygen with regulated re-breathing.

Before the larynx was split a tracheotomy was done, and gas and oxygen was led in through the tube.

At the end of the operation the patient was returned to bed with the tracheotomy tube *in situ*, and when seen ten minutes afterwards he was comfortable and in no pain.

This case is an illustration of what can be done with gas and oxygen, and it has led the author to continue his efforts to perfect this method for other throat work. He finds that the best results for nose and throat work are obtained by using gas and oxygen in combination with a C.E. mixture.

Time alone will show how far it will become possible to develop the method and to reduce the C.E. mixture.

Archer Ryland.

A Case of Bilateral Recurrent Paralysis.—R. Maupetit. "Revue de Laryngologie," No. 12, June 30, 1919.

The patient, a soldier, aged fifty-eight, developed hoarseness six months previously. Had been getting thin. Paralysis of left vocal cord diagnosed. Some time later radioscopy showed a shadow in the mediastinum above the heart. Diagnosis of mediastinal tumour made. Later patient began to suffer from shortness of breath and a swelling of the chest-wall was seen. Both vocal cords now seen to be paralysed. The left cord was in the cadaveric position and immobile, the right moved slightly on inspiration. Tracheotomy determined upon on account of difficulty of respiration and fear of spasm. On introducing the

cannula some resistance was felt and a gush of dark-coloured foetid pus was coughed out. After this the breathing became normal. The patient, however, died in the evening. *Post-mortem* not possible.

J. K. Milne Dickie.

EAR.

Surgical Pathology of the Mastoid.—C. F. Beck. "Annals of Otolaryngology," xxvii, p. 869.

Beck discusses briefly the subject under the following heads: I. Acute mastoiditis: (a) Confluent mastoiditis (cell route); (b) osteophlebitic mastoiditis (vascular route). II. Chronic mastoid disease: (1) Osteofibrosis; (2) osteofibrosis with fistular tracts; (3) osteofibrosis, fistular tracts and cholesteatomatous infiltration; (4) osteofibrosis, fistular tracts, cholesteatomatous infiltration, with cavity formation of cholesteatomatous masses; (5) tuberculous osteitis; (6) syphilitic osteitis; (7) actinomycotic osteitis; (8) reparative osteitis; (9) foreign body—(a) sequestrum, (b) any other substances; (10) neoplasms—(a) sarcoma, (b) carcinoma, (c) endothelioma.

Macleod Yearsley.

Local Anæsthesia in Mastoid Operations.—H. B. Orton. "Annals of Otolaryngology," xxvii, p. 1261.

Based on eight cases (nine mastoids) done under novocain. The results showed: (1) Perfect anæsthesia without prolongation of the operation. (2) Absence of danger of pneumonia from inhalation. (3) Convalescent period shorter. (4) Post-operative pain much lessened. (5) It is to be recommended in all cases following pneumonia and empyema where ether is contra-indicated. The method used was the injection of solutions from $\frac{1}{2}$ to 1 per cent. of novocain. The skin was anæsthetised along the line of incision from above auricle to 1 in. below tip of mastoid, where a deep injection was made to block off the great auricular. The small occipital is blocked by injection $1\frac{1}{2}$ in. behind and on a level with the floor of the meatus. Deep injections were then made under the periosteum along the posterior meatal wall. After the injections five to ten minutes elapsed before operation was commenced.

Macleod Yearsley.

A New Method of Incision of the Tympanic Membrane for Acute Otitis.—R. Lake. "Lancet," 1919, vol. i, p. 977.

The author, finding a high average of mastoid operations after preliminary incision, considers the vertical method unsatisfactory. He advocates, therefore, a crescentic incision "following the contour of the edge and of about the same extent of the posterior superior quadrant." That in his figure appears to take up the superior half of the membrane. The reader is left in the dark as to the fate of the malleus, unless the drawing merely represents the bulging portion of the membrane. [The abstractor has used a similar crescent incision, as giving better drainage, in selected cases for the past ten years. Occasionally an inferior crescentic incision gives better results.]

Macleod Yearsley.

A Case of Acute Septic Meningitis of Otitic Origin: Complete Recovery.—J. Arnold Jones. "Lancet," 1919, vol. ii, p. 59.

This case is chiefly remarkable for its recovery. A mastoid operation had been performed at a casualty clearing station fourteen days before the patient came under the author's care. The organisms found in the

cerebro-spinal fluid were of low virulence and the resisting power of the patient was weakened by malaria. It was the latter factor that probably determined the suppurative lesion of the meninges. From over three years' experience in Macedonia the author has no hesitation in saying that complications of middle-ear suppuration are more common than they would be in England under the same circumstances—a fact due to the deleterious effect of malaria on the resisting powers of the individual. Organisms of low virulence (in this case a Gram-positive staphylococcus and, later, a Gram-positive diplococcus) are thus able to bring about infections, but this very fact gives the patient a chance of ultimately overcoming them. It is noteworthy, too, in the case reported, that marked relief followed each lumbar puncture. *MacLeod Yearsley.*

The Use of Bismuth and Iodoform in the Treatment of Chronic Suppurative Otitis Media.—F. Stoker. "The Lancet," 1919, vol. ii, p. 200.

Commencing by the use of "bipp" in mastoid work, the author was encouraged to use a powder of bismuth and iodoform in certain cases of chronic ear suppuration. He classified cases in four types: (1) Those in which suppuration is not confined to the tympanum, but has extended to the mastoid or labyrinth; (2) those in which nasopharyngeal or tubal sepsis is responsible for the continuance of the suppuration; (3) those in which the bony tympanum is carious. It is in the last group that "bipp" is useful. Technique is important, and may be summarised thus: (1) Establishment and maintenance of thorough drainage, (2) removal of dead epithelium, etc., by hydrogen peroxide; (3) thorough cleansing of meatus and tympanum with spirit, swabbed on, and allowed to dry; (4) covering with insufflations of "bipp." In mild cases one, and in profuse cases three applications weekly will suffice.

MacLeod Yearsley.

Two New Instruments for Reaming the Upper End of the Eustachian Tube in the Radical Mastoid Operation.—Alfred Kahn. "The Laryngoscope," March, 1919, p. 143.

Kahn has devised a "mouse-nosed" Eustachian curette and burr. The curette end consists of a long spoon tapering to a point. The sides of the spoon must be very sharp. The spoon is tipped at its apex by a probe-like nose. The handle is round and roughened, so that the curette can be easily manipulated between the thumb and first finger. The burr is long, narrow and tapering.

J. S. Fraser.

Anatomic Points Determining the Direction of the Needle and the Proper Route for Lumbar Puncture in Children and Adults.—Regan (New York). "Amer. Journ. Med. Sci.," January, 1919.

There is considerable difference of opinion upon details of the operation of rachicentesis, particularly as to the route for puncture and the direction of the needle.

As a result of clinical experience and a study of the anatomy of the parts, the author greatly prefers the median route to the lateral both in children and adults. In children the needle should be introduced directly perpendicular to the spine and exactly in the middle line: in the majority of adults the same direction will be successful especially if the spine be well flexed. In some cases, however ("a decidedly minor percentage"), it is in adults impossible to introduce the needle in a perpendicular

direction, and in such instances the direction must be changed by withdrawing it slightly and directing it obliquely upwards at an angle of 60 to 45 degrees. It is possible to obtain fluid by the median route in adults even in cases of marked opisthotonus if a sufficient upward inclination is given to the needle.

Thomas Guthrie.

Posterior Mastoiditis, with Sub-occipital Abscess and Nervous Syndrome (Foramen lacerum posterius).—Fiocre. "Rev. de Laryngol., d'Otol., et de Rhinol.," July 15, 1919.

Three cases are related in which mastoiditis was complicated by a purulent collection in the planes of the neck below the basis cranii. The nervous syndrome depended on pressure on the anterior condyloid and jugular foramina. The clinical manifestations—some only of which were present in each case—were torticollis, paralysis of one half of the palate and of one half of the tongue. All the cases recovered with free drainage.

H. Lawson White.

The Rapid Cure of Mastoid Operations by the Carrel Method.—M. Mahn. "Acad. de Méd.," April 16, 1918.

In treating acute mastoiditis the writer does the ordinary Schwartz operation, and irrigates the wound with Dakin solution for a period proportional to the duration and virulence of the disease. Secondary suture is carried out as soon as the wound is relatively sterile, *i. e.* when microscopic examination of the exudate shows an average of less than one microbe to each field, provided that that microbe be not a streptococcus. In simple cases a small Carrel tube is stitched into the wound and the rest of the wound closed. After irrigation for two or three days the tube is removed and the skin approximated. A pad is firmly applied to close the dead space. The writer claims to obtain healing in ten days. In cases complicated by inflammation of the soft tissues, as by osteomyelitis, the irrigation is alternated with periods of ordinary dressing for two or three days at a time.

J. K. Milne Dickie.

A Case of Otitis caused by Instillation of Nitric Acid.—B. Agazzi. "Arch. Ital. di Otol.," vol. xxviii, fasc. 3, 1917.

A soldier admitted to otological department April 16, 1917, with running ear.

History of some pain in right ear for a fortnight. Inferior perforation of right drum membrane and some yellow pus seen. Total deafness in right ear.

On April 18 had sudden severe hæmorrhage from the right ear and nostril. Blood venous in character. Incus found lying in the clot in the meatus.

Next day on removing dressing another very copious hæmorrhage occurred which was stopped with plugging.

The same evening patient had a severe rigor lasting an hour. At this stage he confessed that he had introduced a small quantity of nitric acid into his ear in order to go to hospital with otitis. The acid had evidently caused wide-spread necrosis in the ear as evidenced by the falling out of the incus and the hæmorrhage.

On April 20 had severe headache and some spontaneous nystagmus to the diseased side. Caloric reaction on left (healthy) ear produced no effect. Some diminution of the nystagmus when right ear irrigated. The patient showed some asynergia of the left arm of cerebellar type. Some

adiadochokinesia. On attempt to walk the patient fell to the left (sound) side. Plantar reflex extensor on left side; other reflexes normal.

April 22nd: Photophobia; mastoid tenderness; right facial paralysis. Operation. Whole mastoid process necrotic; fistula of external semicircular canal. Some very foetid pus came from vestibule. Tympanic cavity full of septic clot.

April 23: Second operation: Jugular bulb opened up; full of clot. Jugular vein ligatured in neck.

April 29: Complete left hemiplegia.

April 30: Died.

Post-mortem examination showed purulent exudate in the subarachnoid spaces of the brain, more marked on the left side. The right auditory nerve was dark brown and necrotic. The whole right petrous bone was necrosed. The carotid artery and the jugular vein were also invaded by the necrotic process. The right hemisphere of the brain contained numerous abscesses scattered throughout the white matter. Cerebellum and hind-brain unaffected.

The conclusion was reached that the abscess in the brain had been caused by septic emboli arising from the wall of the internal carotid in its course through the petrous bone.

J. K. Milne Dickie.

Physiology of the Eighth Pair: Hearing and Equilibrium.—V. Cheval.

"*Revue de Laryngologie*," No. 12, June 30, 1919.

The author reviews the subject of the functions of the cochlea and vestibule. He regards the rapid component of nystagmus as similar to the tendon reflexes. The afferent nerve-fibres from the extrinsic muscles of the eye are supposed to reach the brain through the trigeminal. He found that injection of novocain into both orbits of a rabbit caused the disappearance of the rapid phase of vestibular nystagmus. Unilateral section of the trunk of the trigeminal sometimes suppressed the rapid phase. Section of both trigeminals always suppressed the rapid phase of vestibular nystagmus and transformed it into a persistent conjugate deviation. As the nucleus of the trigeminal is connected with the neighbouring nuclei of the third, fourth and sixth nerves, and as Sherrington has shown that contraction of one set of muscles produces a contraction of the antagonists, Cheval regards the rapid phase of nystagmus as comparable with the simple tendon reflexes. "As the rapid contraction of the antagonists occurs always suddenly and the sensations of kinaesthesia of the ocular muscles are transmitted by the trigeminal, it follows that the reflex of the rapid phase has a trigeminal origin."

J. K. Milne Dickie.

Two Cases of Labyrinthine Fistulæ.—A. Brindel. "*Revue de Laryngologie*," No. 12, June 30, 1919.

In the one case a radical operation had been performed eight years previously and the posterior wound had been left open, requiring constant dressing. Each dressing caused great vertigo. On operation a fistula was found leading to the labyrinth, but the site of the fistula is not stated. Curetting relieved the symptoms of vertigo, which had become intolerable before operation.

The second case was one of acute labyrinthitis occurring in a case of chronic otitis media. A radical mastoid operation was performed and the labyrinth fistula curetted. The site of the fistula is again not stated. Recovery uneventful.

J. K. Milne Dickie.

Mastoiditis following Explosion.—G. Bilancioni. "Il Policlinico," October 20, 1918.

Bilancioni has had the opportunity of observing numerous lesions of the ear from explosions of various sorts. These were particularly common in the areas of mountain warfare, where mining and tunnelling operations were being carried out. From the practical point of view he distinguishes the lesions which remain aseptic in their whole course from those accompanied by suppuration. In the second class the suppuration comes on early, persists obstinately for weeks, and is accompanied by very abundant reddish, creamy pus. There are large defects in the drum membrane and the mastoid cells are almost constantly involved. There is a profound alteration of the general state with considerable depression. At the commencement the temperature is almost always raised (38.5° or 39° C.) and remains raised or remittent for some time. The mastoiditis is characterised by a wide-spread necrosis of the trabeculae of the mastoid with formation of sequestra.

The writer strongly recommends the wide-spread use of the steel eye and ear protector of Putelli for the prevention of these conditions.

J. K. Milne Dickie.

Vertigo which makes one Hear (Angiospasme Labyrinthique).—Marcel Lermoyez. "Presse Méd.," January 2, 1919.

A curious syndrome has been observed by Lermoyez several times. The patient becomes troubled with noises in the head, and gradually becomes dull of hearing and finally becomes almost completely deaf. The hearing seems irretrievably lost when suddenly a violent attack of vertigo occurs and in several hours the hearing returns.

Three very interesting cases are quoted by the author in which this course of symptoms occurred. One case had been deaf and greatly troubled with subjective noises in one ear for many years. At one time, when the noises were particularly bad, the hearing gradually became worse, and in several days was lost altogether on the one side. Suddenly he had a severe attack of vertigo with vomiting, etc. A few hours later the vertigo disappeared and left the patient hearing again normally. The same cycle of events recurred at long intervals, but finally the patient remained deaf.

Lermoyez points out that this syndrome is similar to Menière's syndrome, but the order of events is reversed. In discussing the cause of the symptoms he rules out middle-ear conditions. The question of hæmorrhage into the labyrinth is considered, but dismissed as improbable on account of the fleeting character of the symptoms. Working on an analogy with blindness due to a spasm of the ocular vessels, Lermoyez suggests that the train of symptoms is due to a spasm of the vessels of the labyrinth. Pain is represented in the auditory nerve by subjective noises and anæsthesia by deafness. Similarly vertigo is pain in the vestibular nerve.

In asphyxia of the extremities, where there is marked spasm of the vessels, the fingers "become dead" and lose their sensibility. If the circulation is briskly restored the vessels dilate, the fingers become blue, then red, and there is tingling and acute burning pain.

The deafness and vertigo are probably due to similar causes with the labyrinth.

J. K. Milne Dickie.

On the Discriminative Power of the Ear for Sounds and Noises.—A. Stefanini. "Arch. Ital. di Otol." xxx. p. 2, May, 1919.

Stefanini gives a detailed description and calculations of a series of experiments carried out with the object of determining the minimal interval at which two sounds can be discriminated. He makes use of an electrical apparatus in which a swinging pendulum makes and breaks the current in passing two metal terminals. This interruption is heard as a short, sharp sound in a telephone ear-piece. If the pendulum falls from a high angle and hence passes the terminals rapidly a single click is heard. As the pendulum slows down the sound becomes prolonged, and later is heard as two consecutive sounds. The gist of this paper appears to be that the minimal interval at which the two sounds are heard by one ear distinctly is 0.015 seconds. When the first sound is transmitted to one ear and the second to the other ear the minimal interval at which the two sounds are discriminated is the same as above, namely 0.015 seconds.

J. K. Milne Dickie.

On a Means of Rendering Romberg's Test more Evident.—C. A. Torrigiani. "Arch. Ital. di Otol." May, 1919.

The author's apparatus consists of a square of strong wire netting fastened to a stout frame which raises it above the floor a few inches. The patient stands on the centre of the netting, and any tendency to fall is accentuated by the elasticity of the netting. The idea is a very useful addition to our examination methods.

J. K. Milne Dickie.

MISCELLANEOUS.

The Psycho-Physiological Offices of Aeronautics.—G. Gradenigo. "Arch. Ital. di Otol." May, 1919.

An article describing the steps taken in the Italian Army to test the aptitude of aviators for flight, etc. Italy was one of the first of the Allies to take adequate steps in this respect. Soon after the commencement of the war a psycho-physiological laboratory was founded and placed under the directorship of Prof. Gemelli. An office for the examination of candidates for the air service was established and commenced to function in July, 1917, in Turin under Lieut.-Col. Herlitzka. Others were later founded in Naples, Rome, etc. These were staffed by scientifically-trained *personnel* and furnished with the best obtainable instruments of precision. Prof. Gradenigo was appointed inspector, and had the duty of co-ordinating and rendering uniform the work of the various laboratories and offices. These offices had the following functions:

- (1) The examination for enrolment of the navigating *personnel*, pilots, observers, balloonists, etc.
- (2) The temporary or permanent exemption from flying service.
- (3) The re-admission to flying duty after a period of exemption.
- (4) Control of pilots after certain accidents.
- (5) Studies on the physiology and hygiene of man in flight.

Each office was divided into the following departments, each of which was in charge of specialised medical officers: General examination, eye examination, examination of ear, nose, throat and vestibular apparatus, physiological department, and psychical examination.

Since August, 1917, 20,000 individuals were examined, of which about 35 per cent. were rejected, and from the statistics of the flying schools since the establishment of these offices the proportion of pupils found unfit for flying has diminished from about 30 per cent. to a minimum. This is a proof of the efficiency of the methods adopted by these offices.

J. K. Milne Dickie.

The Schick Test and Active Immunisation.—J. S. Lawrence. "Albany Medical Annals," July, 1919.

The Schick test is used in cases of diphtheria contacts. It is simple to perform, and by means of it one can determine in thirty-six hours if the patient is susceptible to the disease or not. It is carried out as follows: An amount of toxin equal to $\frac{3}{50}$ of a standard minimal lethal dose (M.L.D.) is diluted with $\frac{1}{10}$ c.c. of sterile salt solution and injected into the layers of the skin of the forearm. If properly done a small white wheal results, which becomes a red spot in twenty-four hours. If the individual is immune, the slight inflammation passes away as quickly as does the control, which is made on the other arm by injecting the same amount of toxin that has been heated above 80° C. for three minutes. If there is no immunity the inflamed area increases for about forty-eight hours, after which it slowly disappears. After eight or ten days the spot turns brown and desquamates. Care must be exercised in performing the test that the injection is not made too deeply, as the result may be negative if that is done.

J. K. Milne Dickie.

Municipal Control of Diphtheria, including Dosage and Methods of Administration of Antitoxin.—F. W. Sears. "Albany Medical Annals," July, 1919.

The writer discusses diphtheria from the point of view of the public health officer.

As regards the administration of antitoxin Schick has shown that it has no value after the toxin has entered the tissue-cells, and that it should always be given early while the toxins are still circulating in the blood. Sears states that if one has given a sufficient dose at the beginning it is not usually necessary to repeat it. He works according to Schick's scheme of dosage, in which, in 90 per cent. of cases 100 units are given for each kilogramme of body weight. The antitoxin is usually administered subcutaneously, but in fulminating cases intravenous injections is preferable. One must first make sure that the patient is not asthmatic nor susceptible to horse odours. If the patient is susceptible, one should give $\frac{1}{5}$ or $\frac{1}{10}$ c.c. and wait twenty minutes. Double this amount may then be given, and after three-quarters of an hour the full dose may be given with safety. The writer has seen one death from anaphylactic shock in a patient sensitive to horse-serum. In the case of diphtheria carriers removal of the tonsils is recommended as the best means of getting rid of the bacilli. It is not dangerous to remove the tonsils even when there are bacilli in the crypts, but in cases of doubt a dose of antitoxin may be given just before. In dealing with contact cases and carriers Sears makes use of the Schick test to determine which cases are susceptible to the disease.

J. K. Milne Dickie.

Sensitisation and Treatment of Bronchial Asthmatics with Pollens.—I. C. Walker. "Amer. Journ. Med. Sci.," March, 1919.

This paper is the third of a series on the treatment of bronchial

asthma, the two others dealing with its treatment by proteins and vaccines respectively. The author's conclusions are that in patients who suffer from seasonal bronchial asthma caused by pollens, the asthma may almost with certainty be prevented provided that sufficient treatment be given before the beginning of the season. The treatment consists of various dilutions of pollen protein, ranging from the strongest dilution which fails to give a positive skin reaction to the strongest dilution which gives a positive reaction.

The treatment with pollens during the season is less reliable, but worth doing in cases in which much treatment preceding the season fails or cannot be given. In such cases very small amounts of the pollen protein should be given, as during the season the patient may encounter an unknown quantity in nature, and the addition to this of too large a dose in the way of treatment may give rise to serious trouble.

Thomas Guthrie.

Poisoning by the New Gases from the Standpoint of Oto-Rhino-Laryngology.—**Vincent.** "Rev. des Laryngol., d'Otol., et de Rhinol." July 15, 1919.

The chief subjective effects of gassing, whether by mustard-gas or arsenical gases, are loss of smell and taste and dysphagia appearing from the first to the third day, and dysphonia and coryza appearing about two days later. Spasmodic cough is more rare, as is also epistaxis. Glottic spasm and Eustachian infections are practically unknown.

The objective signs comprise variable degrees of congestion of the mucosa lining the nose, larynx, trachea, and the presence of ulceration and sloughs in different regions of the respiratory tract. The most constant situation of these is the anterior half of the true cords.

The prognosis as regards life is good. All the patients may be expected to be fit for military duty in from fifteen to forty days, but as regards the local condition the ultimate prognosis should be cautious.

The early treatment consists chiefly in prophylaxis against pulmonary infections. Locally all douches, gargles and sprays should be alkaline. A complete change of clothing at the outset is imperative.

H. Lawson Whale.

LIST OF ORIGINAL PAPERS.

Acta Oto-Laryngologica, vol. i, fasc. 1, 1918. (Abstracted by THOMAS GUTHRIE.)

BÁRÁNY, R.—"Some Eye and Neck Muscle Reflexes in the New-born."

BERGSTRAND, H.—"The Klebs-Löffler Bacillus."

SCHMIEGELOW, E.—"Contributions to the Pathology of Tuberculosis of the Bronchial Glands."

STRANDBERG, J.—"Investigations Concerning Ulcus Neuroticum Mucosæ Oris."

PONTOPIDEN, FR. (Randers).—"Some Experiences of Maxillary Sinusitis."

Vol. i, fasc. 2 and 3.

HOLMGREN, G. (Stockholm).—"Ear Diseases and Lumbar Puncture."

Albany Medical Annals, July, 1919. (Abstracted by J. K. MILNE DICKIE.)

SEARS, FREDERICK W.—“Municipal Control of Diphtheria, including Dosage and Methods of Administration of Antitoxin.”

LAWRENCE, JOSEPH S.—“The Schick Test and Active Immunisation.”

THEISEN, CLEMENT F.—“The Clinical Course and Treatment of Vincent's Angina.”

LEWIS, WILLIAM G.—“High-frequency Electricity in the Treatment of Rose Cold and Hay-fever.”

Ann. of Otol., Rhinol., and Laryngol., vol. xxviii, No. 1. (Abstracted by MACLEOD YEARSLEY.)

HOLMES, Major C. R.—“Presentation of Mastoid Cases, with Remarks and Lantern Slide Demonstration,” p. 1.

LEWIS, Lieut.-Col. E. R.—“Studies of the Ear as a Motion-sensing Organ,” p. 10.

HILL, F. T.—“Report of a Case of Spontaneous Hæmorrhage from the Lateral Sinus Occurring Six Days After Simple Mastoid Operation,” p. 29.

BAUM, H. L.—“Complications and Sequelæ of Tonsil and Adenoid Operations: Their Prevention and Management,” p. 37.

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HOLMES, E. M.—“Errors and Failures in Bronchial and (Esophageal Endoscopy,” p. 55.

STIVERS, Capt. C. G.—“Submucous Resection of Nasal Septum: Complications and Accidents Encountered in 133 Cases,” p. 60.

BURNS, Capt. S.—“Some Unusual Cases met with in Ear, Nose, and Throat Service in a Base Hospital,” p. 73.

SACHS, E.—“The Importance of More Intimate Co-operation Between the Various Specialists who see Neurosurgical Cases,” p. 76.

ROBINSON, J. A.—“Report and Clinical Notes of a Case of Toxic Delirium Following Mastoidectomy,” p. 86.

FRIESEN, J.—“Report of a Case of Brain Abscess,” p. 90.

BLACKWELL, H.—“Report of a Case of Temporo-sphenoidal Abscess of Right Lobe,” p. 92.

LEEGAARD, F.—“Cerebral Abscesses of the Frontal Lobe Originating from the Frontal Sinus and other Intracranial Complications Resulting from Inflammatory Processes of the Nasal Accessory Sinuses,” p. 95.

Arch. Ital. di Otol., vol. xxx, No. 2, May, 1919. (Abstracted by J. K. MILNE DICKIE.)

STEFANINI, A.—“On the Discriminative Power of the Ear for Sounds and Noises.”

GRADENIGO, G.—“The Psycho-Physiological Offices of Aeronautics.”

BENJAMINS, C. E.—“Researches on the *Entanaba buccalis* in Pharyngology and Rhinology.”

CALICETI, P.—“On a Gunshot Wound of the Lateral Sinus and Middle Ear.”

TORRIGIANI, C. A.—“On a Means of Rendering Romberg's Test more Evident.”

National Meeting for the Assistance of Discharged Soldiers.

Il Policlinico, October 20, 1918. (Abstracted by J. K. MILNE DICKIE.)

BILANCIONI, G.—“Mastoiditis following Explosion.”

Journ. Amer. Med. Assoc., vol. lxxiii, No. 4. (Abstracted by J. K. MILNE DICKIE.)

CRAFTS, LEO. M.—“An Original Test for the Pathologic Great Toe Sign.”

Journ. Amer. Med. Sci., June, 1919. (Abstracted by THOMAS GUTHRIE.)

COVEY, G. W. (Lincoln, Nebraska), and BARRON, M. (St. Paul, Minnesota).—“Pathology of (Mustard ?) Gas Inhalation.”

FETRA, L. E. LA (New York).—“Some Clinical Manifestations of Influenza in Children.”

Journal de Médecine, March 25, 1919. (Abstracted by J. K. MILNE DICKIE.)

PUGNAT, A.—“The Clinical Value of the Sign of Garel.”

Lancet, 1919, vol. i, p. 136. (Abstracted by MACLEOD YEARSLEY.)

GUTHRIE, DOUGLAS.—“Nasal Obstruction in Aviators.”

Vol. ii, 1919.

OSWALD, MABEL V. O.—“Stammering and Voice Defects,” p. 355.

GUTHRIE, D.—“Aural Suppuration in Early Childhood: Its Prevention and Treatment,” p. 429.

STOKER, F.—“The Use of Bismuth and Iodoform in the Treatment of Chronic Suppurative Otitis Media,” p. 200.

Presse Médicale, January 2, 1919. (Abstracted by J. K. MILNE DICKIE.)

LERMOYEZ, MARCEL.—“Vertigo which makes one Hear (Angiospasme Labyrinthique).”

L'Ospedale Maggiore, February 28, 1919. (Abstracted by J. K. MILNE DICKIE.)

CALABRESI, A.—“Primary Fibro-myxo-angio-endothelioma of the Middle Ear.”

Rev. de Laryngol., d'Otol., et de Rhinol., May 31, 1919. (Abstracted by H. LAWSON WHALE.)

ABOULKER, HENRI (Algiers).—“Otitic Meningitis with Recovery.”

PUGNAT, AMÉDÉE.—“Subluxation of the Inferior Turbinate in the Treatment of Nasal Obstruction.”

July 31, 1919.

LANNOIS and SARGNON (Lyons).—“Obliteration of the Lateral Sinus in Trauma of the Basis Cranii.”

MOURET and SEIGNEURIN.—“Paralysis of Spinal Nerves following Shell-wounds of the Submastoid Jugular Region.”

LAFARRIÈRE.—“Extraction of a Revolver Bullet from the Right Frontal Sinus.”

August 15, 1919.

PUGNAT, AMÉDÉE (Geneva).—“Primary Diphtheria of the Middle Ear.”

LAURENS, GEORGES (Paris).—“Local Anæsthesia in Oto-Rhino-Laryngologie.”

BARETÈS, J. (Béziers).—“A Case of Foreign Body in the Larynx.”

August 31, 1919.

LANNOIS and SARGNON.—“Stenosis of Larynx and Trachea following the Action of Mustard-gas.”

BARAUD (Lausanne).—“Gas-embolism of the Lateral Sinus after a Mastoid Operation.”

JACQUES and DAURE.—“Influenzal Mastoiditis.”

REVIEWS.

Anatomical and Clinical Studies on the Pharyngeal Hypophysis. By Dr. BENEDETTO AGAZZI. Pania, 1916.

THE pharyngeal hypophysis is a small group of cells fairly constantly present in the adult human being in or under the mucous membrane of the vault of the nasopharynx. It represents all that is left of the stalk of the anterior lobe of the pituitary body, which originally develops as an outgrowth from the buccal cavity of the embryo. It is situated just behind the nasal septum, and is only to be found in microscope sections on account of its minute size. The cells are similar to those composing the anterior lobe of the pituitary. It has apparently no function.

Agazzi in this work describes the development and morphology of the pharyngeal hypophysis and the pharyngeal tonsil. An account is given of several experiments undertaken to determine whether the pituitary had any association with adenoidism. The results were on the whole negative. The author gives a very full *résumé* of the literature bearing on the subject.

J. K. Milne Dickie.

The Blind: Their Condition and the Work being Done for Them in the United States. By HARRY BEST, Ph.D. New York: The Macmillan Co., 1919. Pp. 763 + xvii.

THIS book is a useful compendium for those who have to deal with the blind, and contains a considerable number of useful statistics, the compilation of which must have required the expenditure of considerable labour.

There are some interesting notes of comparison between the blind and the deaf. To the author, the latter approach the general population more along economic lines, and the blind more along psychical and social lines. This is true, because the deaf are denied the assistance of language whilst the blind are not. For the same reason, "The deaf would have less poetry, but more bread and butter; fewer artists, but a greater number of artisans." In the United States schools for the deaf appear to have been instituted before those of the blind.

In the census of 1910 there were 584 blind and deaf persons in the United States; in 1900, 491. These are the most difficult to educate since both the chief portals of information from the environment to the brain are closed. Deaf-blind children are, as in England, more frequently educated in schools for the deaf than in those for the blind. Particulars as to causation in the 584 mentioned above are given.

The work is to be recommended to those who require a book of reference upon the subject.

Macleod Yearsley.

The Care of the Nose and Throat. By W. STUART-LOW, F.R.C.S.Eng. Crown 8vo, pp. xvi + 63. 17 figures in the text. London: Baillière, Tindall & Cox, 1919. 3s. 6d. net.

That the nose and throat are becoming better recognised as one of the body's most important lines of defence against the invasions of disease is one of the real advances of modern medicine and surgery. Mr. Stuart-Low is taking upon himself the rôle of a medical Lord Roberts in warning the laity of the risks they run by neglect of these channels into their interiors. It is to be hoped that the general public will not disregard his and others' warnings as they did those of the great General.

The result of such neglect would be quite as serious. The booklet under review rightly insists upon the importance of prevention and adequately deals with its subject. The chapter on the importance of efficient ciliary action, whilst pointing out the bad effects of destruction of the cilia, does not warn readers of the permanently disastrous results of that objectionable survival of barbarous methods, the galvano-cautery.

Macleod Yearsley.

NOTES AND QUERIES.

LOST NOSE: FOUND AND PUT ON.

A man whose nose was cut off in an accident told at Windsor yesterday a remarkable story of how it was found and put on again. The man, William Robertson, aged thirty-eight, The Broadway, Lambourn, Berkshire, who was employed as a stable lad by Mr. J. Rhodes, of Lambourn, was getting a horse ready for Windsor racecourse on August 15. "As I walked through the doorway," he said, the skylight fell on me and cut my nose clean off. I was taken to King Edward VII Hospital, Windsor, without my nose. The arteries were tied up and the surgeon asked, "Where is the nose?" The doctor's son cycled to the stables, and my nose was found in the box among the straw. It was brought back to the hospital and the nose was put on again. My nose was off for about three-quarters of an hour to an hour." Pointing to his nose, he added smilingly, "It is on now, as you see, and everything is going on satisfactorily. I am to be discharged to-day. I cannot speak too highly of the surgeon, the nurses and the hospital."

Nose alive an hour.—Sir William Shipley, Vice-Chairman of King Edward VII Hospital Committee at Windsor, interviewed by a *Daily Mail* representative, said: "The nose was washed in salt and water and then sewn on by one of the honorary surgeons. After considerable trouble on the part of the sister and nurses—it needed almost hourly dressing with warm salt solution—the nose recovered its vitality, obtained a new blood supply and healed on. There is scarcely any deformity. In fact, it looks as good as ever. The remarkable thing about it is that though the nose was off an hour it lived. I have never known of a similar case." —*The Daily Mail*, September 13, 1919.

ASSOCIATION OF AMERICAN PERORAL ENDOSCOPISTS.

The Second Annual Meeting of this Association was held in Brooklyn, N.Y., on June 5, 1919, under the Presidency of Dr. Arrowsmith, and guided by the active Secretary, Dr. Henry Lynah.

OTOLOGICAL SECTION OF THE ROYAL SOCIETY OF MEDICINE.

The next meeting will take place on November 21. Secretaries: Mr. H. Buckland Jones and Mr. Lionel Colledge.

LARYNGOLOGICAL SECTION OF THE ROYAL SOCIETY OF MEDICINE.

The next meeting will take place on December 5. Secretaries: Dr. Irwin Moore and Mr. C. W. Hope.

BOOK RECEIVED.

Précis d'Anacousie Vocale et de Labiologie. Méthode Oral d'Education auditive, d'initiation phonétique et de lecture sur les lèvres. By *G. de Parrel*. Paris: A. Maloine et Fils, Editeurs, 27 Rue de l'Ecole-de-Médecine. 1917.

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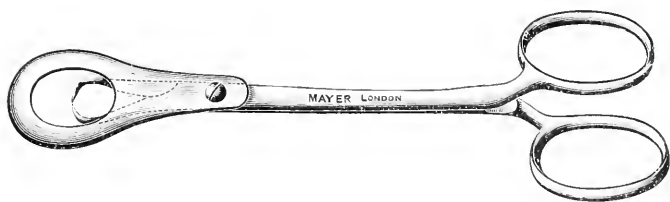
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TONGUE HOLDER AND DEPRESSOR FOR TONSILLECTOMY.

BY JAMES DONELAN, Ch.M., M.B.,

President, Section of Laryngology, Royal Society of Medicine, etc.

THE instrument shown in the accompanying illustration has been found very useful by me during the last two years in removing tonsils by dissection, especially when there was much adhesion from repeated



previous inflammation. It consists of a tissue-forceps on the back of which a fenestrated tongue depressor is fixed. The patient being in the supine position with head retracted over a sand pillow, the points of the forceps are inserted transversely and well back in the dorsum of the tongue. The tongue is then gently drawn forward by the anaesthetist, and at the same time the dorsum is depressed in such a way as to free the respiratory passage and completely expose the field of operation. Dr. Hugh R. Phillips has recently suggested that the handles of the instrument should be curved more than in the present figure so as to keep the holder's hand as far as possible from the field of view, and the instrument, with this improvement, is now being made by Messrs. Mayer & Phelps.

**A SERIES OF CASES OF MAXILLARY ANTRAL DISEASE:
SOME POINTS OF INTEREST.¹**

By W. S. SYME, M.D.

SINCE January, 1914, 878 cases of maxillary antral disease have been observed by me in hospital and private practice. In 599 cases both antral cavities were affected, in 143 the right alone, and in 136 the left alone.

The diagnosis in all cases rested on proof-puncture. In the author's opinion transillumination and X-ray examination as diagnostic methods are unreliable. Dr. Watson Williams's method rests on the same basis as proof-puncture, and is no doubt equally reliable. Very rarely proof-puncture was not possible either from obstruction in the middle meatus to the ostium or from the nature of the contents of the antrum.

As a rule operation has not been advised till after lavage has been used on several occasions. In one case—not in this series—lavage was practised twenty-three times before a cure was obtained, which has been maintained after some years. Occasionally a single lavage effects a cure—or perhaps it would be wiser to say an apparent cure, as recurrences after some months, it may be, have not been very uncommon. The "wash-out" has shown the various characteristics with which we are familiar. In one case a small polypus was washed out of the antral cavity. Occasional faintness has been observed, but no serious result has been associated with puncture of the antrum.

While on the subject of diagnosis, may I say that in the large majority of cases the antral condition would have probably been overlooked if the performance of proof-puncture had depended on the appearance in the nasal cavity—in other words, latent sinusitis is much more common than patent sinusitis. I don't like the term "latent sinusitis." It is indefinite and misleading, because no two observers would be in accord in a number of cases as to which were latent and which were not. In my experience the commonest complaint of the patient is post-nasal discharge. It is not in the province of this communication to discuss the signs and symptoms of antral disease. Like drinking, that is a job by itself. Let me refer to only one or two less usual complaints.

Asthma was complained of by 31 patients. No doubt this is toxic in origin, and I have come to look upon it as a fortunate association for the patient. The cure of the antral disease has a most beneficial effect on the asthma.

Attacks of epistaxis were found in the histories of 9 patients. In 13, apart from war cases, there was a history of an injury to the head, and in one of these cases the disease in the antrum was isolated to the seat of injury.

Ordinary nasal polypi were present in 89 cases, and there was associated middle-ear suppuration in 87. This latter association is, I think, sometimes lost sight of. One case was associated with paroxysmal hæmoglobinuria, but as the case did not come to operation I cannot say what effect the cure of the antral disease might have had on this interesting condition. In 2 cases proof-puncture caused an explosion, which was followed by the evacuation of clear serous fluid.

Atrophic rhinitis was present in 27 cases. Of these 16 were operated on—10 double and 6 single. The condition of the cavity in these cases

¹ Read at the Summer Congress of the Laryngological Section of the Royal Society of Medicine, May 2, 1919.

is of interest. In 8 double and 3 single the changes were bad, which means that the degeneration of the lining was extensive; in 1 double and 1 single they were not bad, and in 1 double and 2 single my notes are deficient in this respect.

Three hundred and ninety-six cases (293 double and 103 single; right 56, left 47) have been operated on. In all except 3, in which the intra-nasal procedure was employed, the radical antral operation was performed. Local anæsthesia alone, according to the method I have previously described, was employed in 306 cases. General anæsthesia was employed in 90. Even with general anæsthesia 20 minims of 10 per cent. cocaine solution with adrenalin added is injected into the cavity through the cannula and spread over it by the gentle use of the air-bag. I should like to recommend this addition to members who have not tried it as it adds greatly to the comfort of the operator, and I have had no anxiety with its use. At the same time there is no doubt in my mind that in antral cases local anæsthesia is to be preferred both from the patient's and still more from the operator's point of view. The only fatality in the series was in a case of mixed ethmoidal, sphenoidal and antral disease in which chloroform was used. The patient died of septic pneumonia. As regards the operation itself, I make use of an incision in the mucous membrane over the canine fossa almost vertical. It seems to allow of a better view into the cavity and of more easily removing the anterior part of the antral wall, or, in other words, of obliterating the anterior angle which I look upon as essential. I also turn a flap of mucous membrane from the inferior meatus into the cavity. This, I think, prevents the growth of granulations over the rough bone in the floor between the antrum and nasal cavity, and so helps to ensure the patency of the opening into the nose. In 8 cases the intranasal operation had been performed some time previously. Two had been drained by the alveolus, and in one an operation had been performed by the canine fossa route thirty years before.

The degenerated changes in the lining membrane of the antrum varied. It may, I think, be asserted that the character of the "wash-out" is no sure criterion of the severity of the changes in the cavity. In a few instances even very purulent cases of long standing showed little naked-eye changes in the lining membrane. Moreover, I think there are cases, infrequent no doubt, where the changes are those of atrophy rather than that of hypertrophy and œdema. I should like the opinion of members on this point. In one case a single large polypus was present in both cavities, and in another case a single large polypus was present in the left cavity, and was attached by a long thin pedicle, which passed through the ordinary ostium, to a choanal polypus. Septal formation in the antrum was fairly common. In 2 cases the cavity was completely divided, in one horizontally into an upper and a lower chamber, and in another transversely into anterior and posterior parts. In 1 case a dentigerous cyst occupied almost the whole antrum, into which it had burst. In 2 cases the cavity was full of thick cheesy material. I have seen 1 case in which the sphenoidal sinus was similarly affected. In 2 cases the antrum was full of very sticky material such as that present in the cases described by Mr. Tilley as due to aspergillosis. In one of these cases lavage was impossible. In only 1 case, apart from direct injury, have I found destruction of the external antral wall. In this case the fat of the cheek intruded into the antrum.

Unlike the other accessory sinuses, equality of the two antral cavities

is the almost universal rule. In one patient the left cavity was much smaller than the right. In another patient, an adult, both antral cavities were very small. The external wall and floor were very thick and sclerosed on either side. The sclerosed floor extended above the level of the attachment of the inferior turbinate.

Twenty-six cases of choanal or antro-nasal polypus was observed. In 2 of these there was a choanal polypus on both sides. In 5 the polypus had returned after removal. The antral cavities affected were equally divided—14 each right and left. In 12 cases there was a single antral ostium. In 1 case the membrane, in which the ostium is located, was practically absent, and there was a large opening into the antral cavity. It was possible to see easily directly into the antrum by way of the middle meatus. An accessory ostium, posterior to the ordinary ostium, was found in 3 instances. In 13 the presence or absence of an accessory ostium was not noticed. In 1 case of right-sided choanal polypus there was sweating and increased heat over that side of the face.

The "wash-out" on lavage showed gradations from almost clear serous fluid in 1 case, straw-coloured in 5, to muco-purulent or purulent in others.

The antrum was opened in 17 cases. The condition of the lining membrane in these was as follows: In 12 the diseased condition was general. In 2 the change was isolated to the place from which the polypus arose, in 1 from the wall below the ordinary ostium, and in the other from the posterior recess adjacent to an accessory ostium. In 1 case there was a large polypus in the antral cavity. Traction on the choanal polypus caused movement of this polypus, and the connecting pedicle was traced through the ordinary ostium. The specimen is shown. In the remaining 2 cases there were other changes in the lining membrane, but not bad.

REPORTS FOR THE YEAR 1918 FROM THE EAR AND THROAT DEPARTMENT OF THE ROYAL INFIRMARY, EDINBURGH.

Under the care of A. LOGAN TURNER, M.D., F.R.C.S.E., F.R.S.E.

PART I.

THE COMPLICATIONS OF CHRONIC MIDDLE-EAR SUPPURATION. INDICATIONS FOR, TECHNIQUE AND RESULTS OF, THE RADICAL AND MODIFIED RADICAL MASTOID OPERATIONS; DETAILS REGARDING THE LABYRINTHINE AND INTRACRANIAL COMPLICATIONS OF CHRONIC MIDDLE-EAR SUPPURATION.

(A Paper Based on an Analysis of 306 Cases of Chronic Middle-ear Suppuration, as follows: Radical Mastoid Operations, 248; Modified Radical Mastoid Operations, 17; Labyrinthitis, 26; Intracranial Complications, 25.)¹

By J. S. FRASER, M.B., F.R.C.S.Ed., and W. T. GARRETSON, M.D.Iowa, F.R.C.S.Ed.

(Continued from p. 444.)

CASE 14: *Synopsis*.—No. 278. R. T.—, female, aged twenty. C.O.M.S. (right). Patient first seen October 16, 1914, and name entered for operation, but patient not admitted for operation till February 17, 1915. *First operation* (radical mastoid)

¹ At a meeting of the Otological Section of the Royal Society of Medicine, held February 21, 1919.

revealed erosion of lateral canal. Skin-graft, however, applied. Ten days after operation fever developed, with headache and vomiting. Cerebro-spinal fluid normal. Signs of labyrinthitis present. *Second operation.*—Neumann's labyrinth operation performed. Later, symptoms of sinus thrombosis developed. Blood-culture showed streptococcus. *Third operation.*—Sinus opened and jugular vein ligatured. Septic symptoms, however, continued, and jugular bulb (*fourth*) operation performed. Recovery. (Case recorded in full in *Edin. Med. Journ.*, November, 1915.)

CASE 15: C.O.M.S. (Bilateral); *Radical Operation, Right Ear; Cholesteatoma; Perisinus Abscess; Accidental Rupture of Sinus above the Clot; Packing; Sinus opened and Anterior Wall excised; Secondary Suture of Wound; Recovery.*—No. 279. T. J.—, female, aged seventeen, first seen at the Royal Infirmary in March, 1915. She has had discharge from her left ear of unknown causation for at least six years. The right ear has also been deaf for a number of years, but has not discharged. Of late she has had severe attacks of pain in the left ear and two months ago had an attack of sickness and vomiting which lasted eleven days. She is always giddy when she first gets up in the morning and also feels sick.

Examination.—Left meatus full of pus and shows granulations. R.M.T. shows a perforation of Shrapnell's membrane.

Functional Examination: (1) *Cochlear apparatus.*—Watch heard at 1 in. on the right side, but only on contact on left. Watch heard well on both mastoids. Whisper at 1 ft. right ear and conversation voice at 1 ft. left ear. Schwabach lengthened. Weber lateralised to the right (better) ear. Low tones not heard by left ear. (2) *Vestibular apparatus.*—Rombergism doubtful. Rotation to right and also to left produced after nystagmus of thirty seconds' duration. Cold syringing of each ear induced nystagmus in sixty seconds.

First operation, March 27, 1912. (Radical mastoid operation on left ear by Dr. Logan Turner.)

July 22, 1913: Patient reports. Left (operated) ear dry, but right ear discharging. February 20, 1915: Patient returns, complaining of severe pain in her right ear for the last five days. During the last day or two she has vomited and has been unable to sleep at night.

Examination.—No rigidity of neck. Kernig's sign absent. No spontaneous nystagmus or giddiness. Watch heard on right mastoid and raised voice heard at 1 ft. by right ear. Weber still lateralised to the right. On cold syringing of the right ear nystagmus to the left is produced in two minutes.

Operation on Right Ear (J. S. F.), February 22, 1915.—Mastoid cortex normal. Process sclero-diploëtic. Large foul-smelling perisinus abscess opened (pure growth of pneumococcus obtained on culture). Anterior wall of sigmoid sinus greyish-green and sloughy. Antrum full of cholesteatoma. Only remnants of the ossicles found. The sinus was now further exposed in a backward direction, and in doing this the vessel was ruptured and a very free flow of blood was obtained from the torcular end. The wound was plugged and left open. February 23: Temperature 97°-98° F., pulse 84, respirations 24. Patient fairly well. February 26: headache and vomiting through the night. Temperature 97° F., pulse 60. The tongue is covered by dry brown fur. No nystagmus. February 27: Temperature and pulse as yesterday. Ear dressed. The cavity looks well. The packing was removed from the sinus and no bleeding occurred. The anterior wall of the sinus was removed with forceps and scissors and the cavity was found to contain dark red clot and some granulation-tissue. In spite of the subnormal temperature, the slow pulse and the condition of the tongue the patient looks well, so that it has been decided to wait and not to operate further in the meantime. March 1: Temperature 98° F., pulse 76. The tongue is now clean and moist and the mastoid cavity satisfactory. In view of the satisfactory condition of the patient the retro-auricular wound was closed to-day with stitches. March 6: Temperature 98° F., pulse 76. Wound healing fairly well. The mastoid cavity is satisfactory. March 21: Patient dismissed, to report once or twice weekly. The wound behind the ear is healed and the mastoid cavity looks well.

CASE 16: C.O.M.S. (left); *Rigors; Sigmoid Sinus exposed by another Surgeon, but appeared healthy; Hectic Fever continued; Blood-culture showed Streptococcus. Second Operation by J. S. F.; Jugular Vein ligatured; Sigmoid Sinus full of Septic Clot; Drowsiness present after Second Operation and some return of Fever but Second Blood-culture negative. Third Operation: Plastic Closure of Wound; Recovery.*—No. 473. C. K.—, female, aged twenty-five, was brought to the Infirmary December 10, 1917, complaining of pain in the left ear, headache, vomiting and loss of sleep. The patient had a rigor ten days before admission. She was admitted to the

wards of another surgeon who found tenderness over the left mastoid, temperature 100° F., marked neck rigidity, and middle-ear deafness in the left side. Patient was operated upon by the surgeon shortly after admission. The mastoid cortex was normal and there was no pus in the antrum. The dura of the middle fossa was exposed and appeared healthy. Lumbar puncture at the end of the operation yielded clear fluid under tension. The case did not do very well after operation and there were daily elevations of temperature, which in the afternoon reached 100° F., 102° F. and finally 105° F. on December 16th. As the surgeon who had operated was absent on holiday the patient came under the care of J. S. F.

December 17: Examination showed a dry, brown tongue. Patient appeared hectic. There was no headache, vomiting, giddiness or nystagmus. With the noise-box in the left ear patient was quite deaf. A blood-culture was made. (The report issued on December 19 was to the effect that a Gram-positive streptococcus was present which showed chains up to 80.) December 18: Second operation (J. S. F.) The left internal jugular vein was ligatured above the junction with the common facial. At this point the vein appeared healthy. The vein was divided but both ligatures were left on. The sigmoid sinus was then exposed towards the torcular for an inch and a-half. The anterior wall was slit up and the vessel found full of red clot. (Microscopic sections of the vein wall and clot showed Gram-positive diplo-streptococci in great numbers.) The clot was turned out and the anterior wall excised. Slight bleeding was obtained from the torcular end but none from the bulb end. The anaesthetist now reported that the patient was rather collapsed, and accordingly no further attempt was made to get beyond the clot towards the torcular. In the afternoon the temperature rose to 103° F., pulse 120. Salines were given *per rectum*. December 19: Fairly good night. Wound dressed; no bleeding from torcular end of sinus. Worst drain inserted into cavity of sinus. Ligature removed from bulb end of jugular vein but attempt to wash through from the sinus to the neck failed. December 20: Temperature now much lower—98 to 99·6° F., pulse 92 to 104. Some reaction in wound. No bleeding from either end of sinus; no rigors; patient rather flushed. She has been drowsy till to-day, but is now brighter and takes food better. December 23: Temperature has come down to normal; pulse 104. Wound looks well. Bleeding to-day from torcular end of sinus. December 26: For the last three days there has been a recurrence of fever in the afternoon, temperature rising to 101° F. and the pulse to 120. Patient is still rather drowsy. A second blood-culture was made on the 24th, but shows no growth. December 29: Temperature normal for four days; pulse 92. No packing in either end of sinus. Neck wound stitched to-day. January 14, 1918: Plastic operation was not a great success, but the wound is decidedly smaller than before. February 14: Wound behind ear is healed. The operation cavity looks well except for the continuance of discharge from the Eustachian tube.

Remarks.—Case appears to have been a fairly typical one of septic thrombosis of the sigmoid sinus. The only remarkable feature in the case was the patient's drowsiness—a condition one does not often meet with in sinus thrombosis. The case, however, presented no other symptoms of brain abscess. It is possible that the drowsiness may have been associated with the condition of the lateral sinus. The operator was aware that he had not obtained free bleeding and reached healthy brain-wall when the operation had to be stopped on account of the condition of the patient. The progress of the case after the operation, however, was fairly rapid towards recovery.

CASE 17: *C.O.M.S. with Cholesteatoma; Extradural Perisinus Abscess; Lumbar Puncture showed Meningitis; Sinus Thrombosis present but Jugular not Ligatured; Later, Cerebellar Abscess evacuated; Death.*—G. D—, male, aged eight. C.O.M.S. (right) for three years, since scarlatina. Sudden onset of earache, shivering, giddiness and vomiting. Edematous swelling over mastoid. Marks of old glandular abscess in neck. Right ear not deaf. Rotatory nystagmus to right. At first operation mastoid cortex whitish-grey, foul pus in mastoid (*B. coli*). Extensive extradural perisinus abscess; antrum full of cholesteatoma; incus absent. Respiration stopped on three occasions during operation. Lumbar puncture showed cerebro-spinal fluid under pressure. Polymorphs and organisms present. Hectic temperature for three days after operation; occasional vomiting. *Second operation.*—Sinus opened and thrombus removed; free bleeding from both ends of sinus; jugular not ligatured; cerebellar dura opened and gauze drain inserted. Kernig's sign developed and optic neuritis. Two days later (*third operation*) cerebellar abscess evacuated. Eight days after third operation temperature rose

to 103° F.; vomiting present. Meningitis became more marked and patient died from coma twelve days after third operation.

Post-mortem.—General purulent meningitis; large abscess in right lateral lobe of cerebellum; right internal jugular vein not thrombosed. *Microscopic examination of labyrinth* showed organisation of thrombus in roof of jugular bulb; meningitis in internal meatus; cochlea normal; engorgement of vein accompanying aqueduct of cochlea and also of vessels of fossa subarcuata; no perforation of windows; vestibular structures normal; erosion of bone of lateral canal exposing endosteum, but no circumscribed labyrinthitis. Posterior canal showed circumscribed labyrinthitis, the erosion having occurred from the extradural abscess in the posterior fossa.

CASE 18: *C.O.M.S. with Cholesteatoma; Acute Exacerbation, with Rigors, Vomiting, and Signs of Meningitis; Extradural Perisinus Abscess but no Sinus Thrombosis; Death apparently from Meningitis; Post-mortem refused.*—E. R.—, female, aged twelve. C.O.M.S. (right). Sudden onset of earache and headache. Wilde's incision by patient's doctor. Hectic temperature with rigors and vomiting for a fortnight. Diplopia for two days. *Examination:* Temperature 104.5° F.; dry, brown tongue; retraction of head; photophobia; paralysis of right external rectus; Kernig's sign present; marked but not complete deafness in right ear. Patient too ill for functional examination. *Immediate operation.*—Mastoid cortex whitish-grey; large extradural perisinus abscess with foul pus; dura greenish and sloughy; cholesteatoma in antrum; ossicles absent; tympanum full of granulations; sinus opened and free bleeding obtained. Lumbar puncture: fluid under slightly increased tension but apparently clear. Excess of white cells but no organisms. Temperature continued high for two days, pulse 140, respirations 44. Moist sounds at base of lungs. Meningitic cry developed. Death three days after operation. *Post-mortem* refused.

CASE 19: *C.O.M.S. (bilateral); Patient a Deaf-mute as the Result of Old Labyrinth Suppuration on both sides; Recent Acute Exacerbation of Middle-ear Suppuration on Right Side, with Commencing Meningitis; Radical Mastoid Operation; Perisinus Abscess and Sinus Thrombosis; Jugular Ligatured; Rigors continued. Intravenous Injection of Eusol; Metastatic Abscesses in Lung with Empyema; Death.*—No. 454. C. S.—, male, aged ten, seen at the Royal Infirmary on January 5, 1917. Patient came from the Deaf and Dumb Institution at 54, Henderson Row, Edinburgh. Unfortunately very few details were obtainable. (The mother was in prison and was only seen after the death of the patient. The father was absent in France on active service. The mother herself was rather deaf and stated that her deafness came on after the birth of her second baby. She suffered from tinnitus. The mother stated that she had never had any miscarriages, but her fifth pregnancy resulted in the birth of a stillborn child. Of her twelve children only the patient was deaf. She stated that the boy had never spoken and had not had otorrhoea as a baby? He was late in learning to walk—two years and eight months. The patient had been in the Deaf and Dumb Institution since the age of eight. The discharge only began just before he went to the Deaf and Dumb School? *Note.*—It is doubtful whether much importance is to be attached to the mother's statements.)

On examination the right external meatus was filled with discharge, and, after syringing, an attic perforation was observed, from which some cholesteatoma protruded. The left drumhead was retracted and showed an adherent scar in the posterior superior part. Functional examination was impossible, as we were not able to communicate with the boy. The radical mastoid operation was advised, but, as has been explained above, there was some difficulty in obtaining permission.

June 20: Patient admitted as an urgent case for operation. About June 16 the boy began to be feverish, the temperature rising to 101° or 102° F. each afternoon. The right external meatus was now found to contain a polypus. It was again found that functional examination was almost impossible. When the sounding tuning-fork was placed on the patient's vertex he only nodded his head and smiled. Apparently he did not hear any of the tuning-forks by air-conduction on either side and did not respond to vowels spoken in a loud voice close to his right ear. When the left ear was tested in the same way he nodded his head as if he heard something (?). *Vestibular apparatus.*—No Rombergism, no spontaneous nystagmus, no fistula symptom; rotation to left and to right produced no nystagmus; cold calorie test was negative on both sides. The temperature rose at 8 p.m. on the day of admission to 106° F., but there was no shivering or vomiting. The boy, however, became cyanosed and drowsy. There was apparently slight pain on pressure on the neck.

June 21: Temperature 101.8° F., pulse 116, at 8 a.m. The medical managers of the Infirmary were communicated with and decided that operation should be performed at once in spite of the lack of permission from the parents. 12 noon: *Operation*.—Chloroform, followed by ether. Lumbar puncture performed on the table: cerebro-spinal fluid clear and not under tension. (Microscopic examination showed some increase of cells, mainly polymorphs and a few diplo-streptococci. No growth on culture.) The usual incision was made for the radical operation, behind the right ear. The superficial tissues and mastoid cortex were normal the process was sclero-diploëtic. The antrum contained foul-smelling pus under tension. The long process of the incus had disappeared and the malleus had granulations adhering to it. The bone over the sinus was removed and the perisinus abscess evacuated. (Direct films from the pus were swarming with organisms. A Gram-positive diplo-streptococcus, Gram-positive bacilli and two types of a Gram-negative bacillus. Cultures showed the Gram-positive diplococcus and the Gram-negative bacillus.) The sinus wall was greyish-green and necrotic. A horizontal incision was made in a backward direction towards the torcula for two and a-half inches, and the bone removed until healthy sinus wall was reached. The sigmoid sinus was slit up and found to be full of a blackish-green clot. Free bleeding was obtained from the torcular end, which was plugged. The sinus was then exposed towards the bulb, but it was impossible to reach a healthy part. (The anterior wall of the sinus was excised and a subsequent microscopic examination showed a thrombus adherent to the wall. The thrombus contained masses of cocci in pairs and chains.) The right internal jugular vein was accordingly ligatured below the common facial, which was tied off. The upper end of the internal jugular vein was found to be clotted. As the lower end was also clotted at the point of ligature a further dissection was carried out in a downward direction for about an inch until a non-clotted portion of the vein was reached. By this time the child was very pale and the pulse feeble. The bulb end of the internal jugular vein was stitched to the skin: the operation wounds were lightly packed and left open. The patient was returned to bed, the limbs bandaged and the foot of the bed raised. Duration of operation nearly two hours. Saline solution was given intravenously, and later, pituitrin. 8 p.m.: Patient cyanosed, cold and clammy. Pulse not countable. Saline given *per rectum* and brandy by the mouth. Saline also given intravenously. Temperature 103.6° F. June 22: Patient has had a bad night. Temperature 96.6° F. this morning, pulse 92, respirations 26. Boy is taking some nourishment. Evening temperature 98.8° F., pulse 84. June 23: Patient has had a better night: slept fairly well. Temperature 98.8° F., pulse 106. At 12 noon, however, the boy had a rigor with cyanosis, followed by sweating. Wound dressed at 1 p.m. The posterior wall of the sigmoid sinus looks sloughy. Bulb washed through, but no pus washed out. Free bleeding obtained from torcular end when packing removed. In view of the urgent need of the case Prof. Lorrain Smith was consulted regarding intravenous injection of ensol, and on his advice at 5 p.m. 50 c.c. were given under chloroform anaesthesia. About an hour later the boy became cyanosed and had a rigor, with feeble pulse and rapid breathing. Later in the evening he vomited and the temperature rose to 103° F. June 24: Patient had a good night. Temperature 98.2° F., pulse 100. June 25: Temperature rising to-day from 100° to 102° F., pulse 120. The boy is very emaciated and is not taking his food well. There is no reaction in the wound. The jugular bulb again washed through and only clear fluid returned. On June 26 the patient had a fairly good day and on the 27th the temperature again rose to 104° F. The patient's breath has a sickly sweet odour and the wound is very inactive. There is no bleeding now from the torcular end of the sinus. Prof. Lorrain Smith advises against a further injection of ensol. June 28: Patient has now developed a short cough and there is a suspicion of friction on the right side in the post-axillary line. The wound shows slight signs of reaction. June 30: There have been daily risings of temperature to 102° or 103° F.; pulse varies from 110 to 160; respirations 36 to 44. The wounds in the head and neck show slight reaction, but the arm-wound shows none. Examination of the chest reveals feeble breath-sounds. The right base was explored, but no fluid obtained. The mental faculties are clear, but the patient is bothered by coughing fits. July 2: Rigor at midnight last night. Temperature 105° F., pulse 152. To-day second intravenous injection of ensol given under chloroform anaesthesia, the vein again being exposed by dissection. (Blood-culture showed no growth on the first and second day, but on the third a Gram-positive staphylococcus was noted—probably a contamination from the skin.) July 4: Temperature rose to 103.8° F. at 8 p.m., pulse 148. Patient taking his food better, but the head-wound is still very inactive and the cerebellar dura looks

sloughy, while the cut edges of the bone are blackish. The lungs were examined by a physician, who found dullness at both bases but no signs of fluid. July 6: Patient has got rapidly weaker and thinner and the eyes are becoming sunken. The wounds show no reaction. There is dullness at the left base, but the physician reports no signs of fluid. There is now some incontinence of urine and feces. There are daily risings of temperature varying from 101° to 104° F., the pulse from 120 to 160, and the respirations have been as high as 58. Patient has been getting nuclein for the last day or two and also champagne and beef-juice. July 8: Condition as regards temperature, pulse and respirations much the same. Antistreptococcus serum given. Patient is rapidly going downhill. July 12: Patient died at 7.15 p.m. to-day.

Post-mortem.—*Post-mortem* clot in superior longitudinal sinus; soft thrombus in the right lateral sinus. The left pleural cavity showed much purulent effusion. Left lung collapsed. On section the left lung showed multiple abscesses. Right lung oedematous and congested and on section shows one or two small abscesses. Liver large, pale and fatty. Kidneys pale, soft and friable. Spleen enlarged, pale and soft. There was a small focus of suppuration at the point of the ligature of the right internal jugular vein, but below this the vein appeared healthy.

Remarks.—We were somewhat handicapped in dealing with this case owing to the fact that the father was absent on military service and the mother in prison. The value of the history subsequently obtained from the patient's mother is more than doubtful, and the probability is that the patient had discharge from both ears early in life and that the deaf-mutism was due to labyrinthitis following an extension of the middle-ear suppuration on both sides. (Subsequent microscopic examination of both inner ears has shown the accuracy of this opinion, but details must be held over at present.) If we had been able to admit and operate on the child when he was first seen in January, 1917, it is probable that a good result would have been obtained—at least as regards the life of the patient—but unfortunately permission for operation could not be got at this time. When the boy was brought back in June of the same year he already had an intracranial complication, *i.e.* extradural abscess and septic thrombosis of the sigmoid sinus. Again, there was slight delay in operating on account of the difficulty in getting permission. The operation revealed cholesteatoma, perisinus abscess, thrombosis of the sigmoid sinus and upper portion of the right internal jugular. The condition of the patient at the end of operation was grave and various restorative measures were employed. The case did not do very well after operation and about a week later developed a cough. At first it was thought that there was dullness at the right base and this was explored. As will be seen from the *post-mortem* report the left pleural cavity was full of purulent fluid and the left lung collapsed. Had this condition been discovered during life it is at least possible that the result would have been different. In view of the condition of the chest it is not surprising that the various methods of treatment adopted, *e.g.* saline transfusion, stimulants, intravenous injection of ensol, antistreptococcus serum, etc., were without result. It is true that the *post-mortem* showed a soft clot in the right lateral sinus and a small area of suppuration in the lower end of the right internal jugular vein, just at the point of ligature, but the operator is of opinion that the small amount of sepsis in these situations would not have led to death had the chest condition been diagnosed and treated.

The moral would appear to be that in cases of sinus thrombosis with chest symptoms too much reliance must not be placed upon the physical signs and the opinion of the physician. We should be ready to explore both sides of the chest with a large needle and syringe, in order to make sure that there is no accumulation of pus in the pleural cavity.

CASE 20: *Chronic Suppurative Otitis Media (Bilateral); Cholesteatoma and Circumscribed Labyrinthitis (Fistula) on Right Side; Septic Thrombosis of Right Sigmoid and Lateral Sinuses. First Operation: Extradural Abscess (R.); Radical Operation Performed; Sigmoid Sinus opened and Internal Jugular ligatured; Rigors continued: Second Operation on Jugular Bulb; Death. Post-mortem: Extensive Thrombosis of Cerebral Sinuses; Infarcts in Lungs and Broncho-pneumonia; Septic Changes in Internal Organs.*—No. 250. A. B—, female, aged fifteen, came to the Royal Infirmary August 24, 1914, with a history of discharge from the right ear since the age of five years. For two weeks she has had pain and noises in the ear. For two days the pain has been so severe that the girl has been kept in bed. At first the pain was situated behind the ear and in the neck but on admission the patient also had frontal headache. For a month or two she has complained of giddy

attacks and has vomited frequently during the last four days. For two days patient has had shivering attacks.

Examination.—Patient is somewhat drowsy but answers questions distinctly. Temperature 98.6° F., pulse 100, respirations 20. She is slightly cyanosed and the tongue is dry and furred. There is no irritability but the cheeks have a hectic flush. There is no loss of memory and the patient readily recognises articles which are shown to her. No facial paralysis. The patient is so deaf that one has to shout to her. Pupils equal and contracted. Eye movements normal. No photophobia. Pressure on eyeballs rather painful. Cutaneous hyperæsthesia present and slight dermatographia. Knee-jerks not active. Kernig's sign present. No retraction of abdomen. No optic neuritis. *Ears:* Right meatus full of pus and *débris*. After syringing it is seen that the tympanic membrane has disappeared and that cholesteatoma is present in the upper part of the tympanum. There is tenderness on pressure below and behind the mastoid. Patient objects to her head being moved. The left meatus is also full of *débris*, and after syringing a pulsating spot of light can be seen.

Functional Examination: Cochlear Apparatus.—The conversation voice is not heard by either ear. Even a shout cannot be heard by the right ear, but by the left ear the raised voice is heard at 6 in. The watch is not heard by air- or bone-conduction on the right side, but on the left it is heard at $\frac{1}{2}$ in. by air-conduction and is also heard on the mastoid. Weber lateralised to the left (better ear). Rinne negative on the left side and absolutely negative on the right. No tuning-forks are heard by the right ear by air-conduction, but the upper forks are heard by the left ear and the upper tone limit on this side is normal.

Vestibular Apparatus.—There is slight spontaneous nystagmus to the left, but no spontaneous pointing error. Fistula symptom is positive on the right side and produces giddiness. Cold syringing of the right ear produces no nystagmus even after two and a-half minutes. The caloric test was not carried out on the left side as the patient was not well enough.

Lumbar puncture evacuated fluid under great tension but not turbid. No increase of cells observed and no organisms found after centrifuging. On culture only *Staphylococcus albus* obtained (contamination?).

First Operation on day of admission. A large extradural perisinus abscess was evacuated. The abscess contained some gas. The dura of the sinus and of the posterior fossa around it was grey and sloughy. The radical operation was performed. The perisinus abscess appeared to be quite cut off from the cholesteatoma in the antrum. The malleus and incus were absent. A fistula was found in the posterior part of the lateral canal prominence but was not further investigated and the labyrinth operation was not performed. A transverse incision was now made and the lateral sinus exposed in a backward direction for about 2 in. The sinus was slit up and firm reddish-brown clot removed. (Small Gram-negative organism, coccus or bacillus?). The clot extended backwards towards the torcular. Free bleeding was obtained from the torcular end. The sinus was now traced downwards and was found to be in a collapsed condition. The superior petrosal sinus was also clotted. As no free bleeding was obtained from the bulb end of the sigmoid sinus the right internal jugular vein was exposed and ligatured above the junction of the common facial. The upper end of the divided jugular was not opened at the time of operation. Both wounds were lightly packed but not stitched. An attempt to obtain blood from an arm vein for culture failed owing to the collapsed condition of the veins. Saline injections were given at the end of operation, which lasted about two hours.

August 25, 1914: Temperature 98° F., pulse 108. Patient looks fairly well and tongue is cleaner. August 26: Rigor at 2 a.m. and another at 11 a.m. Wound dressed and upper end of vein in neck opened. Attempt to wash through the bulb not successful. August 27: Temperature 101° F., pulse 120. Vein washed through. Patient has been vomiting. August 29: Temperature has remained about 101° F. and pulse 120 for the last two days. Patient has been restless but has had no more rigors. There has, however, been sweating. The packing was removed yesterday from the torcular end of the sinus but had to be replaced owing to hemorrhage. September 1: Temperature has been lower for the last two days (about 100° F.) but to-day it has risen to 104° F. and patient has had a rigor with sweating. The sinus has been washed out daily and a lot of pus has been obtained from the bulb end. September 3: Patient had two rigors yesterday with temperatures of 104° and 105° F. It was accordingly decided to give

her the chance of operation on the jugular bulb after the matter had been fully explained to her parents.

Second Operation.—Further removal of bone of posterior cranial fossa so as to expose sinus behind the facial nerve. The cerebellar dura was raised with Stacke's protector. There was no facial twitching. The jugular bulb was reached without much difficulty and a soft catheter passed down through it into the vein in the neck. September 4: Temperature 99° F. since last operation but pulse 130. The wound is fairly clean but shows very little reaction. September 7: The temperature reached 106° F. yesterday and the rigors have recurred. The wound shows no reaction. September 10: Rigors have been of frequent occurrence, temperature reaching 105° and 106° F. on several occasions and the pulse varying from 140 to 170. Optic neuritis is now distinct on the right side. September 11: Death.

Post-mortem.—Organised adherent clot present in the torcular end of the right lateral sinus and also in the superior longitudinal and straight sinuses. The lumen of these has been partially restored. In the superior longitudinal sinus there is some softening of the clot. There is no meningitis and only slight congestion of the pia. The brain on section shows only oedema.

The lower part of the right pleura shows slight recent pleurisy. There are several pale areas in the lungs showing commencing fibrosis, and towards the surface there are well-defined infarcts with pleurisy over them. Scattered throughout the lung there are small patches of broncho-pneumonia. Generally the lungs show oedema and congestion while the lower lobe of the right lung is collapsed. The heart is dilated but there is no endocarditis.

There are old caseous glands in the mesentery. The liver and kidney show well-marked cloudy swelling. There are no infarcts in the spleen but the organ is enlarged and of a uniform pink colour.

Microscopic examination of right middle and inner ear: The inner wall of the tympanic cavity is covered by squamous epithelium (cholesteatoma); membrane of the round window thickened; the facial nerve on the inner wall of the tympanum is surrounded by fibrous tissue. The ampullary end of the posterior canal and aqueduct of the vestibule have been opened at the operation on the jugular bulb. There is considerable organisation of clot in the jugular bulb. The cochlear opening of the perilymph aqueduct contains pus cells. It is remarkable that in this case the scala media contains more pus than the scala tympani or scala vestibuli. The vestibule contains semi-purulent exudate and the membranous structures are hardly recognisable. The fundus of the internal meatus contains a little pus. The lateral canal shows a fistula (circumscribed labyrinthitis); both perilymph and endolymph spaces of the lateral canal contain pus.

CASE 21: C.O.M.S. (bilateral); *Operation performed on Left Ear (Dr. Turner); Cholesteatoma; Recovery. Later, Operation done on Right Ear by Clinical Assistant under supervision (J. S. F.); Dura Middle Fossa Exposed; Skin-graft Applied. Subsequent Condition unsatisfactory; Headache, Drowsiness, Dilatation of Right Pupil, etc. Third Operation (J. S. F.): Temporo-sphenoidal Abscess evacuated; Slow Recovery.*—No. 455. J. M.—, male, aged seventeen, came to the Infirmary on February 2, 1917, complaining of discharge from both ears since childhood. On admission there was a swelling behind the left ear, which had been incised by his own doctor on three occasions. The fistula was still discharging on admission. Examination showed cholesteatoma in the external meatus. The left canal was narrow. Hearing-tests showed middle-ear deafness on both sides. With the noise-apparatus in the left ear the patient heard raised voice at 3 ft., and, with the noise-box in the right ear, he heard the raised voice at 2 ft. Rotation both to right and to left gave an after-nystagmus of normal duration (twenty-five seconds). Cold syringing of the right ear produced nystagmus after two minutes, but on syringing the left ear there was no response after three minutes (external meatus very narrow).

February 7: *First Operation (Dr. Logan Turner).*—Left mastoid cortex eroded. Process sclerotic; antrum contained cholesteatoma; inner end of posterior meatal wall entirely destroyed; roof of antrum also gone. Ossicles not found; labyrinth wall healthy. Graft applied. Patient made a good recovery after the operation on his left ear and left the hospital on March 10.

June 1: Patient readmitted for operation on the right ear. June 4: *Second operation* by clinical assistant, supervised by J. S. F. Radical operation on right ear. Mastoid cortex healthy; process diploic; antrum small; sinus far forward; middle fossa low; dura exposed here for an area of about $\frac{1}{2}$ in. square; antrum contained pus; malleus and body of incus ankylosed; tube cured; Koerner flap; cavity skin-grafted and wound behind ear closed. June 8: First

dressings. Stitches removed; graft in position: temperature has been slightly elevated in the evening since the operation. June 11: Temperature about 100° F. for last two days, pulse 84 to 100. Posterior wound healed; ear clean; graft in position. First degree nystagmus to left. June 14: Vomiting. June 17: Patient very drowsy: complains of frontal headache: vomiting continues; no rigidity of neck, but slight suspicion of Kernig's sign; knee-jerks normal: plantar flexion. June 18: Temperature 98° F., pulse 60. Slight spontaneous nystagmus to right (side of recent operation). No pointing error: patient hears conversation-voice at 18 in. with left ear closed with finger and raised voice at 1 ft. with noise-box in left ear. Prompt response to cold syringing of right ear. Patient is becoming thinner. Conclusion come to was that there were no signs of labyrinthitis or of cerebellar abscess or of thrombosis of the sigmoid sinus, but that there might be some meningeal irritation or possibly an abscess of the temporo-sphenoidal lobe.

June 18: *Third operation* at 12 noon (J. S. F.). Old incision, which had firmly healed, was opened up; skin-graft removed. Wound cavity appeared satisfactory. Nothing further done: cavity packed with hypertonic saline gauze; urotropine given. Lumbar puncture performed, fluid clear (film showed a few polymorphs and a marked increase in the lymphocytes, but no organisms. No growth on culture. The reaction of the fluid was alkaline; sugar absent; albumen and globulin increased.

June 19: Temperature 98° F., pulse 56; pupil of right side dilated: twitching of limbs, especially on left side; no vomiting; facial contractions on right side. 6 p.m.: *Fourth operation*.—Vertical incision made downwards through right temporal muscle: large area of squama removed with gonge and forceps; dura of middle fossa bulging markedly and not pulsating. Dura incised, and also brain: foul-smelling abscess evacuated. (Film of the pus showed innumerable organisms, mainly Gram-negative bacilli, Gram-negative diplococci, with some Gram-positive bacilli. Culture showed Gram-positive diplo-streptococcus, Gram-positive bacillus, and also a diphtheroid and a Gram-negative motile bacillus. The latter organism was regarded by Miss Fitzgerald as characteristic of brain abscess cases when found in the cerebro-spinal fluid.) Cigarette-drain inserted. June 20: Temperature 97° F., pulse 56, respirations 20; no vomiting: patient has had a better night. Pupils equal and moderately dilated. Wound dressed: slight hernia cerebri, painted with 10 per cent. formal. Two small tubes inserted into brain abscess. June 21: Temperature 97.6° F., pulse 64. Patient looks better and is not so resistive as formerly: tongue dirty and furred; muscles of right side of face still contracted. He yawns frequently. June 23: Temperature 97° to 97.6° F., pulse 64. Patient's memory very defective. He is again noisy and resistive; tries to get out of bed. Lumbar puncture evacuated clear fluid under normal pressure. June 27: Mental condition still the same; patient has struck the nurses. Hernia cerebri as before. Tongue is now clean and his appetite good. Temperature remains between 97° and 98° F. and the pulse about 64. July 2: Patient considerably better. Temperature 98.4° F., pulse 86. Hernia cerebri smaller. Mastoid wound shows reaction. Mental condition improved. July 21: Since last report temperature has varied between 97° F. and normal, and patient has been doing well, but in the last two days temperature has risen to about 100° F. in the evening and pulse to 106, and the patient has vomited and been drowsy. Hernia cerebri increased. Foul-smelling pus evacuated on exploring abscess. Herpes on lips has developed. August 25: Since last report condition has been satisfactory. Tube removed three days ago from brain-abscess. Patient discharged, but is to come up daily for dressings. February 26, 1918: Both ear cavities satisfactory except that Eustachian tube is open in both sides. Brain abscess region completely healed.

Remarks.—The first operation on this case calls for no comment. The second operation was performed by one of the clinical assistants under the supervision of J. S. F. The only possible error appeared to be the application of a skin-graft to the operation cavity after the dura of the middle fossa had been accidentally exposed. The patient showed no symptoms of temporo-sphenoidal abscess on admission before the second operation and the conclusion come to was that the abscess was the result of this operation. It was remarkable that the wound healed so well and that the operation cavity appeared satisfactory. The temperature, however, became elevated and vomiting set in, followed by subnormal temperature and mental symptoms. There were no signs of labyrinthitis, sinus thrombosis, or cerebellar abscess, and the diagnosis lay between meningeal irritation—the symptoms of which are often anomalous—and abscess of the temporo-sphenoidal lobe. Lumbar puncture excluded meningitis, and the onset of dilated

pupil on the right side, with twitchings of the left side of the body, convinced us that a temporo-sphenoidal abscess was present. This was confirmed at the last operation. The further progress of the case was slow, and was interrupted about a month after the last operation by retention of pus in the brain abscess. This, however, was relieved by improving the drainage. The patient was a Celt from the far north and was of rather a melancholy disposition. His mental condition after the development of the brain abscess was interesting: from a shy, quiet youth he became resistive and sometimes violent, and this maniacal tendency passed off slowly. The convulsions of the opposite side of the body quickly subsided after the evacuation of the abscess, but the facial contracture on the same side continued for a considerable period. The fact that the patient had a recurrence of the symptoms of brain abscess almost five weeks after the abscess had been opened and drained points to the necessity of keeping these cases of brain abscess under observation for a very considerable period. The writer has known cases which have been operated upon and discharged as cured being brought back to hospital six months and more after the operation, with a recurrence of the symptoms of brain abscess, and dying from septic oedema of the brain in spite of prompt opening of the old abscess-cavity. We must admit that the healing power of the brain tissue is very feeble, if, indeed, it can be said to exist at all.

CASE 22: C.O.M.S.; *Cholesteatoma; Temporo-sphenoidal Abscess; Radical Mastoid Operation and Opening of Brain Abscess; Later, Rupture of Abscess into Lateral Ventricle; Meningitis; Death*—No. 230. N. S.—, female, aged eleven—first seen April 17, 1914, complaining of discharge from both ears for five years following scarlet fever and diphtheria. Patient has had occasional pain all these years and for the last three weeks has been vomiting off and on and has not been able to sleep on account of severe headache. No giddiness. Patient's doctor reports that the vomiting was of *gastric origin* and that there was no tenderness on pressure about the ears. The headache was controlled by phenacetin.

Examination.—The patient looks ill—more so than a stomach condition would warrant. Her eyes are listless and her mental processes dull. The external meatus on both sides contains yellowish-green foul-smelling pus. After syringing right tympanic membrane is seen to be almost completely destroyed but there is no mastoid tenderness on the right side. Details of left tympanic membrane cannot be made out but there is marked mastoid tenderness on the left side. Temperature 97.8° F., pulse 60. Tongue furred and dry. *Functional examination*.—*Cochlear apparatus*: Watch heard on forehead, on both mastoids and on contact by both ears. Schwabach lengthened. Weber not lateralised. Rinne negative both ears. C32 and C64 not heard by either ear by air-conduction. C128 heard by both. *Vestibular apparatus*: No spontaneous nystagmus; no Rombergism; no pointing error. Patient too ill for rotation and caloric tests. Child can name a penny, pencil, knife and watch, but cannot name keys or a hand-bag. She named a handkerchief very slowly. There is no pain on tapping the skull or pressing on the head. April 18: Child lies on the diseased side. Temperature 96.6 F., pulse 58. Patient has slept badly and yawns a great deal to-day. She vomited in the early morning and now complains of headache over the left frontal and temporal regions. There is no restlessness, irritability or photophobia. No pain on pressure on eyeballs; no cutaneous hyperaesthesia and no stiffness of neck, but there is distinct tenderness on percussion of the left temporo-sphenoidal region. Knee-jerks absent. Superficial reflexes present. Grasps equal. Sensory aphasia more marked. Pronation and supination tests normal. Optic fundus perfectly normal. The rough test shows no limitation of the field of vision. Leucocytosis 11,000.

Operation.—Slight oedema of superficial tissues, especially over posterior part of left temporo-sphenoidal region. Cortex normal. Mastoid contains scattered cells with greenish-brown lining membrane. The antrum showed cholesteatoma (streptococci, Gram-positive diplococci, Gram-negative bacilli—*B. proteus*). Sinus exposed and found healthy. Malleus and incus absent. Attic cavity very large and full of cholesteatoma. Dura of middle fossa exposed and showed granulations over a small area. Dura opened and temporo-sphenoidal lobe explored in upward and backward direction. Foul-smelling abscess evacuated (Gram-positive diplococci and *B. proteus*). Finger passed in and found large smooth-walled cavity. Piece of brain removed to provide better drainage. Cavity packed with bismuth gauze. Wound left open. April 19: Patient got heroin at 11 p.m. and thereafter had a good night. No vomiting. Temperature 98.4 F., pulse 76. Tongue clean and moist. Wound dressed and showed a lot of discharge. Patient can now name scissors and a book but again could not name the key, though she

said it was "for opening doors." Headache absent. April 20: Temperature 98.2° F., pulse 76. Patient looks well. She can name all articles shown to her this morning. Abscess-cavity draining satisfactorily. No headache or vomiting. April 21: Patient sitting up in bed and anxious to get up. Temperature 98° F., pulse 76. No pus from brain abscess to-day. Bony wound looks healthy. April 25: Patient has continued to do well. Examination of fundus shows edges of discs slightly hazy. April 27: For the last two nights temperature has been up to about 101° F., pulse 120. No headache or vomiting. Tongue clean and moist though patient has been rather constipated. Brain abscess apparently draining well, but there is a considerable amount of hernia cerebri and the discharge has rather an offensive odour. April 30: Temperature normal for the last two days but to-day it was noted that the dressings were soaked with cerebro-spinal fluid. May 3: Discharge of cerebro-spinal fluid continues. Temperature normal but pulse 116. May 6: Temperature last night 103° F. Frequent vomiting and severe headache. Patient cries out "My head." Retraction of head and stiffness of neck present. Child is frightened and restless and wants to know what is wrong. Abscess opened up with forceps which easily passed in for a considerable distance—probably into the lateral ventricle. Profuse flow of turbid cerebro-spinal fluid. May 8: Temperature up to 103° F., pulse 140. Severe headache and marked retraction. Dry furred tongue. Sordes on teeth. Photophobia present. Child restless and excited and complains of great thirst. May 10: Temperature 104° F., pulse 120. Child alternates between delirium and coma. Tendency to Cheyne-Stokes' respiration. Marked hernia cerebri with foul odour. May 13: Complete coma. Temperature normal, pulse 112. Twitchings of face have developed. Lumbar puncture evacuated greenish, slightly cloudy fluid under increased pressure. Oscillating movements of eyes noted. May 15: Death.

Post-mortem.—Dura tense. Pus along sulci in a patchy fashion over vertex. Large amount of yellowish-green fibrinous pus in interpeduncular space and extending down the spinal cord. The left temporo-sphenoidal lobe contains a large abscess-cavity with greyish-green sloughy walls.

There is a small *ante-mortem* thrombus the size of a split-pea in the left sigmoid sinus.

Remarks.—The result in this case was very disappointing as the patient continued to do well for ten days after operation. There was, however, considerable amount of hernia cerebri, and the discharge remained offensive. Rupture into the lateral ventricle occurred and thereafter signs of meningitis developed, though less rapidly than usual. Death only took place seventeen days after the rupture.

CASE 23: C.O.M.S. (Right) with Recent Exacerbation; Wilde's Incision before Admission. *Radical Mastoid Operation: Cholesteatoma with Extra-dural Abscess in Middle Fossa: Later, Headache, Rigor, Stiffness of Neck and Optic Neuritis; Slow Pulse and Coma. Second Operation: Temporo-sphenoidal Abscess opened but apparently it had already ruptured into Lateral Ventricle; Meningitis; Death.*—No. 500. W. R.—, male, aged twenty-nine, came to the Infirmary April 3, 1918, complaining of discharge from the right ear of twelve years' duration. Discharge came on during an attack of measles. Three weeks before admission patient had pain in the right ear and a swelling formed behind the ear. His own doctor lanced the swelling a few days before admission. On the day before admission he had a shivering attack. There was, however, no headache, vomiting or giddiness. Temperature 98° F., pulse 72.

Examination of the left ear showed a retracted scar in the posterior part of the drumhead. The right meatus contained pus and there was marked sagging of the posterior superior wall, which occluded the canal. The mastoid region showed an old scar. The incision made by the patient's own doctor was just below this old scar. *Functional examination of the cochlea* showed middle-ear deafness. Weber lateralised to the right (worse ear). With the noise apparatus in the left ear patient could not repeat words spoken even in a loud tone. He stated, however, that he could hear something. *Vestibular apparatus:* There was no spontaneous nystagmus; no Rombergism; rotation both to right and to left caused after-nystagmus of normal duration. The caloric test was not carried out on account of the narrowing of the meatus. April 4: *Radical operation on right ear* (J. S. F.) The old incision was opened up and a small hole found in the mastoid cortex. The antrum was full of cholesteatoma. Malleus and incus were absent or were not found. There was a small extra-dural abscess in the middle fossa, but as there was no fever present on admission the sinus was not exposed. The cavity was not grafted but the walls were smeared with B.I.P.P. The wound was closed at the upper end but drained at the lower end. April 5:

Temperature at 8 p.m. 100° F. Patient was restless and got a hypodermic of heroin. April 6: Patient complains of headache. There has been no vomiting and the pupil on the right side is not dilated. Wound dressed and stitches removed. No pus present but the cavity looks rather inactive. Temperature at 8 p.m. 101.6° F., pulse 84. April 7: Patient looks ill, anxious and frightened. There is great headache and stiffness of the neck. Kernig's sign present. Examination of the eyes shows congestion and swelling of the right disc. Lumbar puncture only evacuated a little blood-stained fluid not under increased pressure. Cultures showed no growth. With the noise-box in the left ear patient is still able to hear a little. On examination of the wound it was found that the dura of the middle fossa was not bulging. At noon the patient had a "cold feeling." At this time the pulse was 65, but the temperature 103° F. Patient gradually became comatose during the afternoon. He had, however, received $\frac{1}{12}$ gr. of heroin at 4 p.m. on account of the restlessness and pain.

April 7, 1918 (contd.): *Second Operation*, 9 p.m.—Sigmoid sinus exposed and found healthy. Large area of middle fossa exposed. The dura was now found to be tense and not pulsating. A crucial incision was made, and foul, watery pus with bits of brain-tissue evacuated. A finger was introduced and the walls of the abscess found to be very soft. Cigarette drains were put into the abscess-cavity.

April 9: For the last two days patient has been getting worse and has not slept at all, even after heroin. He was restless yesterday but to-day is very drowsy. There has been a free flow of cerebro-spinal fluid mixed with pus and brain-tissue on dressing brain abscess, which seems to show that the abscess had already burst into the lateral ventricle. The temperature, which has hardly been raised for thirty-six hours, rose in the evening to 101.4° F.

April 12: Patient gradually became weaker and died at 6.45 a.m. Just before death the temperature rose to 104° F. and the pulse to 130.

Post-mortem.—The base of the brain was covered with foul suppurative exudate, and there was extensive general congestion of the meninges. A large abscess cavity was found in the white matter at the site of the optic radiation on the right side. The abscess had ruptured into the lateral ventricle and spread forward into the anterior horn and also over to the left lateral ventricle. The abscess appeared to be an acute one.

Remarks.—In this case there is room for some doubt as to whether the abscess was already present on admission. The patient had suffered from a shivering attack on the day before coming to hospital, though he had had no headache. There were no other signs or symptoms leading one to suspect a brain abscess, and operation only revealed a small extra-dural abscess in the middle fossa. In view of this the operation cavity was not grafted and the wound was drained at the lower end. Patient did not do well after operation and suffered from severe headache. As is well known, the symptoms of temporo-sphenoidal abscess on the right side are very obscure, and diagnosis correspondingly difficult. There was, however, no dilatation of the pupil on the right side. Lumbar puncture did not give the usual result obtained in cases of meningitis, and blood-culture was negative. At the second operation the sinus was exposed and found healthy, but a large abscess of the right temporo-sphenoidal lobe was evacuated. The discharge from the abscess was foul and watery, and it is almost certain that at this time the abscess had already ruptured into the lateral ventricle. Thereafter the history of the case was that of a purulent meningitis.

CASE 24: C.O.M.S. (Bilateral); Recent Exacerbation on Right Side, with Headaches, Vomiting and Rigors; Kernig; Lumbar Puncture proved Meningitis. Radical Operation: Sinus Exposed but appeared Normal. Rigors Continued; Jugular Ligated; Headache and Signs of Meningitis became more marked and Patient died from Coma. Post-mortem: Right Temporo-sphenoidal Abscess present which had Ruptured into Lateral Ventricle.—No. 514; D. H.—, male, aged twenty-three, admitted June 16, 1918. Patient has had discharge from both ears for many years. Two weeks before admission he complained of headache and vomiting and his temperature was 101° F. Two rigors before admission. Patient treated by his doctor for biliousness and sent to the medical side of the Infirmary as a case of biliary colic.

Examination.—Patient obviously ill and slightly delirious. Tongue dry and furred. Head retracted. Kernig's sign present. Marked nystagmus both to right and to left. Patient not quite deaf in right ear with noise-box in left. Marked mastoid tenderness on right side but no swelling. *Immediate operation*: Lumbar puncture evacuated turbid fluid under great tension (films showed Gram-positive diplo-streptococci, also numerous degenerated white cells). Radical mastoid operation right ear (J. S. F.) Mastoid sclerotic. Antrum

contained foul pus under pressure (diplococcus.) Whitish area of bone over sinus. Sinus exposed and found normal. Wound left open. June 17: Quiet night but rigor at 5.30 a.m. Tongue dry and furred. Kernig's sign present.

Second Operation.—Ligature of right internal jugular vein after facial had been tied off. June 18: Rigor at 8 a.m. (Blood-culture done on admission now reported negative.) Patient restless and rather noisy; complains of intense headache. Heroin given at 8 p.m. Temperature 101° F. June 19: Fairly good night. Temperature 97° to 98° F. To-day there is marked head-retraction. Operation cavity looks very inactive. Lumbar puncture evacuated purulent fluid under great tension. Rigor at 3 p.m. Temperature 103° F. (Report on cerebro-spinal fluid shows numerous organisms—Gram-positive diplococcus; Gram-negative bacillus, *B. proteus* or *B. coli* group; slender Gram-positive bacillus.) (Second blood-culture has also proved negative.) June 20: Rigor at 1 p.m. Temperature 103° F. June 23: Rigors continue. Patient comatose. Death at 1 p.m.

Post-mortem.—Marked general leptomeningitis. There was a small hole on the under-surface of the right temporo-sphenoidal lobe which communicated with an abscess about the size of a large walnut. The abscess had thick walls and contained greenish pus and had ruptured into the right lateral ventricle. Both lateral ventricles contained purulent fluid. The right sigmoid sinus contained recent red clot with no sign of suppuration.

Remarks.—The probable sequence of events was as follows: Chronic middle-ear suppuration on both sides with a recent exacerbation on the right side. This was followed by temporo-sphenoidal abscess on the right side accompanied by headache, vomiting and rigors. As meningitis was present on admission it was probable that there was already some leakage from the abscess at this period. It seems likely, however, that gross rupture of the abscess into the lateral ventricle only occurred about three days before death. The vomiting, which was so marked before admission, was not prominent afterwards, and the symptoms were rather those of sinus thrombosis than of meningitis. As already noted in the previous case an abscess of the right temporo-sphenoidal lobe is very difficult to diagnose. One can only suppose that the absorption of pus from the abscess gave rise to the repeated rigors. It may be of interest to note that the patient's uncle died in Klondyke from a brain abscess.

CASE 25: Chronic Suppurative Otitis Media (left); Latent Labyrinth Suppuration and Cerebellar Abscess (Left); Radical Mastoid and Labyrinth Operation; Cerebellar Abscess Opened (Sigmoid Sinus Injured). Death. Post-mortem: Edema of Brain round Cerebellar Abscess.—No. 200. J. B.—, male, aged twenty-seven, was first seen at the Victoria Hospital for pulmonary tuberculosis August 25, 1913. He gave a history of discharge from the left ear of many years' duration. About three weeks ago, after a cold in the head, he complained of pain in the left ear, associated with vomiting and giddiness. The latter was so severe that he could not stand and he was confined to bed until his removal to the Victoria Hospital two days ago. Vomiting has been frequent. (The writers are indebted to Dr. Power, Resident Physician, Victoria Hospital, for the following notes of the case: The patient was examined at a North of England infirmary some days ago. He was then complaining of pain in the lower dorsal region between the scapulae and also of pain in the legs which had lasted for five days. The case was diagnosed as one of influenza and the patient was treated at home for ten weeks. About three weeks ago pain began in the left ear and after three days spread to the frontal, temporal and occipital regions. On August 13 the patient vomited immediately after taking food. There had been no previous stomach pain and the vomited food was unchanged. The vomiting continued and also the headache. For the last three weeks the patient has slept badly and has lost much flesh. He has also suffered from constipation. Dr. Power examined the patient August 21, and found a normal knee-jerk on the right side, but a greatly diminished one on the left. The optic discs appeared to be blurred. Patient stated that he had had discharge from the left ear for fifteen years following scarlet fever.)

Examination by J. S. F. at Victoria Hospital, August 25. Temperature and pulse subnormal. Patient lies on his back in bed. He complains of headache, which at times is so severe as to make him call out. The left meatus contains foul-smelling pus and cholesteatoma, but there is no mastoid tenderness. With the noise-apparatus in the right ear patient is quite deaf. Weber lateralised to the right (good) ear. There is spontaneous horizontal nystagmus both to right and left, but none on looking straight forward. The pointing-test shows a deviation to the left at the left wrist and shoulder-joints. With the right hand the patient points almost correctly. Cold syringing of the left ear produces no increase in the

spontaneous nystagmus to the right. Patient too ill for Romberg test. The grasp by the right hand is much stronger than that of the left, but the patient is a right-handed man.

The case was regarded as one of chronic suppurative otitis media in which a recent attack of labyrinthitis had occurred and in which cerebellar abscess was probably present. The patient expressed his willingness to submit to operation and was accordingly removed to the Royal Infirmary.

Operation, August 25.—Radical mastoid operation, left ear. Cortex sclerotic. Antrum large and filled with cholesteatoma. Malleus and incus absent. Sinus exposed and found healthy. Dura of posterior fossa separated from the bone in an inward direction towards the internal meatus. Neumann's labyrinth operation performed, opening up the posterior and lateral canals; vestibule freely opened behind the facial nerve. Promontory removed. Dura of triangular area split up and cerebellar abscess evacuated just behind the position of the mastoid antrum. As the drainage obtained through this opening did not appear to be sufficient a transverse incision was made backwards from the original incision and the cerebellar dura exposed behind the sinus. In doing this the sinus was accidentally opened and the bleeding greatly interfered with further attempts at operation. The idea of a counter-opening behind the sinus was therefore abandoned. The cerebellar abscess was lightly packed with strips of bismuth gauze and the operation cavity left open.

The patient died in the evening after operation from interference with respiration. Towards the end the pulse-rate rose from 70 to 130, but the temperature continued subnormal.

Post-mortem.—Skull-cap very thin, convolutions flattened. The small abscess in the left lobe of the cerebellum has been drained, but there is marked cedema around it. The brain as a whole is very cedematous—the pons Varolii being markedly affected. There is no apparent meningitis.

Microscopic Examination.—Cholesteatoma is seen on the inner wall of the attic and aditus. The most interesting feature of this case is the presence of thrombosed vessels passing through the fossa subarcuata from the inner wall of the antrum to the posterior fossa. The facial nerve is intact throughout. The cochlea appears healthy. The vestibule has been opened up and contains blood and chips of bone. The internal meatus shows little signs of meningitis. The lateral semicircular canal has been opened up by the operation. In the superior canal the perilymph space contains pus and blood.

CASE 26: C.O.M.S., with Cholesteatoma. Labyrinth apparently healthy, but Meningitis probably present on Admission. Radical Mastoid Operation; Extra-dural Abscess in Middle and Posterior Fossa; Symptoms of Meningitis increased and Translabyrinthine Drainage therefore carried out; Coma; Death.—No. 457. W. G.—male, aged nineteen, was first seen on August 10, 1917, suffering from deafness in and discharge from the left ear since measles in childhood. Patient joined the Army in 1914 and had been in four hospitals on account of his ear condition. He was discharged from the Army in January, 1916. He has all along refused to have his ear operated upon. One week before admission earache and headache began.

On admission temperature 99° F., rising to 103° F. in the evening; pulse 90 to 100; respirations 26. The left meatus was blocked by a polypus surrounded by pus. There was slight projection of the left auricle. The right meatus contained wax. Patient could only hear raised voice close to the left ear with noise-box in good ear, but tuning-fork tests showed only middle-ear deafness. Marked spontaneous nystagmus to the diseased side and also upwards, but no pointing error and no giddiness; no fistula symptom. Tongue moist, but furred. No vomiting; Kernig's sign absent; knee-jerks present; plantar response to Babinski's test. Patient mentally bright and could recognise and name at once objects shown to him.

August 11: Operation.—Lumbar puncture performed first of all. Cerebro-spinal fluid under great pressure, but clear. (Report from Pathology Department. Small number of polymorphs, but no organisms seen. No growth on culture.) Radical operation on left ear: Cortex normal; mastoid sclerotic; emissary vein far forward and apparently thrombosed. Antrum large and full of cholesteatoma and pus; pus in cells between sinus and antrum, also pus between bone and dura in middle fossa. Ossicles markedly eroded; tympanum full of granulations; lateral canal healthy; cholesteatoma in attic. Vestibular apparatus did not respond to cold lotion on operating table. Dura of middle fossa showed some granulations. Anterior wall of sigmoid sinus also appeared red, rough and thickened, but no

obvious perisinus abscess. Operation cavity packed with hypertonic saline gauze; wound left open.

August 12: Temperature 100° F., pulse 60, respirations 20. Nystagmus to left (diseased side) still continues, but upward nystagmus absent; no vomiting. Superficial dressings changed. August 13: Patient not so well. Headache and vomiting present. Pulse 68, temperature 99° F. Patient had to have heroin last night. Lumbar puncture performed to-day under ethyl chloride general anesthesia; cerebro-spinal fluid under great tension and almost purulent (films showed diplococci; no report on culture).

Second operation at 12 noon to-day. Dura of middle and posterior fossae further exposed; labyrinth operation with drainage of internal meatus; silver wire inserted; foul, purulent fluid came from internal meatus. Dressings applied. 10.30 p.m.: temperature 100.6° F., pulse 78, respirations 30. Third lumbar puncture: 10 c.c. of antistreptococcal serum injected. August 14: Temperature 100.4° F., pulse 70, respirations 28. Patient has required frequent injections of morphia during the night. Wound dressed. Pus flowing from opening into internal meatus; facial paralysis present; dura covering left temporo-sphenoidal lobe incised to relieve tension. Patient became unconscious at 5 p.m. Temperature rose to 103° F. at 8 p.m., pulse 104, and patient died at 10.45 p.m. Unfortunately the parents refused permission for a *post-mortem*.

Remarks.—This case again illustrates the danger of delay in operation on cases of chronic foul-smelling middle-ear suppuration. From 1914, when the patient joined the Army at the age of sixteen years, up to January, 1916, when he was finally discharged from the Army, he was on four occasions in hospital on account of his ear condition, but always refused an operation. It was only after he had suffered from pain and headache for one week that he came into the Royal Infirmary. Examination on admission showed chronic suppuration on the left side, with polypus, but an apparently healthy labyrinth. The patient's general symptoms, however, pointed to meningitis, *e.g.* headache, spontaneous nystagmus to the diseased side, and a cerebro-spinal fluid under tension and containing polymorphs. Operation showed cholesteatoma in the attic and antrum and pachymeningitis in the middle and posterior fossae. The labyrinth appeared healthy. Unfortunately the radical mastoid operation was not followed by improvement, the symptoms of purulent meningitis rapidly developed and lumbar puncture showed that the cerebro-spinal fluid had become purulent. Translabyrinthine drainage evacuated foul-smelling pus from the internal meatus. The patient rapidly became comatose and died. As permission for an autopsy was refused it was not possible to determine the route of infection. All along the symptoms did not point to a septic thrombosis of the sigmoid sinus or to brain abscess, but it is impossible to state with certainty that these conditions were not present.

CASE 27: C.O.M.S. (Bilateral); Recent Injury to Occipital and Mastoid Region on Left Side, followed by Headache; Vomiting and Giddiness; Radical Mastoid Operation on Left Side; Extra-dural Perisinus Abscess found; Later, Symptoms of Meningitis or Cerebellar Abscess Developed, followed by Coma. Second Operation: Left Sigmoid Sinus found to be Thrombosed and therefore slit up; Dura Covering Cerebellum opened and Pus evacuated from Surface; No Abscess of Cerebellum. Death. Post-mortem.—No. 403. A. W—, male, aged eighteen, railway porter, was admitted August 6, 1916, with a history of discharge from both ears of at least two years' duration. A week before admission patient got a blow on the left side of his head in the occipital region from a piece of coal and was unconscious for a time afterwards. He did not vomit on recovery but some hæmorrhage from the left ear was noted at the time. Since this accident the patient has complained of headaches and has vomited occasionally. He has also complained of giddiness and states that external objects have appeared to rotate. No history of rigors was obtained.

Examination.—Temperature 99° F., pulse 80. Patient holds his head inclined to the left side and there is marked mastoid tenderness on this side. The external meatus on both sides contains pus, and on the left side a polypus is present. The right drumhead shows a perforation in the posterior part through which cholesteatoma protrudes.

Functional Examination.—*Cochlear apparatus:* Schwabach lengthened. Weber not lateralised. Rinne negative on both sides. Conversation voice heard by the right ear at 15 in. With the noise apparatus in the right ear the patient can hear the raised voice at 10 in. *Vestibular apparatus:* No spontaneous nystagmus; no pointing error; no Rombergism; rotation and caloric tests not carried out on account of the patient's condition.

There is slight spasticity of both legs, especially the right one. The right knee-jerk is exaggerated and ankle clonus is present on this side. There is narrowing of the fields of vision in the upper and outer quadrant on both sides.

First operation at 3 p.m. on day of admission. Radical operation on left ear. Cortex normal. Mastoid sclerotic. Cholesteatoma in antrum. Large foul-smelling extra-dural abscess in posterior fossa around the sigmoid sinus. (Films from the pus showed many organisms: Gram-positive diplococci predominate, but there are also Gram-negative diplococci and bacilli. On culture Gram-positive and also Gram-negative diplococci along with Gram-positive and Gram-negative bacilli were obtained.) The perisinus abscess had no direct connection with the antrum. The radical operation was completed: the malleus and incus were removed and found to be eroded. The tympanum was full of granulations but the prominence of the lateral canal and also the promontory appeared healthy. The wound was lightly packed and left open. Lumbar puncture was performed at the end of the operation and showed cloudy cerebro-spinal fluid under great tension. (In films many polymorphs were seen along with a few Gram-positive and Gram-negative diplococci, both intra- and extra-cellular. No growth was obtained on culture.) A blood-culture was also taken at the end of the operation but no growth was obtained in this. August 7: Temperature 98° F., pulse 76. Patient appears to be doing well. August 10: Temperature 97° F., pulse 60. Patient has had a restless night and complains of headaches. He attempted to get out of bed during the night and had to get heroin. August 11: Temperature 97 F., pulse 54. The tongue is dry and brown. Patient again had a restless night and frequently broke into song. The head is retracted and optic neuritis is well marked to-day. There is marked rotatory nystagmus to the left (side of operation). At 5.30 p.m. the breathing developed the Cheyne-Stokes' character. Patient almost comatose. Incontinence present. Marked tache cerebrale. Kernig positive. Lumbar puncture evacuated turbid fluid under pressure. (Films showed many degenerated cells and a Gram-positive diplococcus along with a Gram-positive bacillus. No growth was obtained on culture.)

Second Operation.—Almost no anesthesia was required but artificial respiration had to be kept up during the earlier part of the operation. An incision was made backward and downward from the centre of the retroauricular wound. The dura of the cerebellar fossa was exposed by further removal of bone and slit up. The sigmoid sinus, which was found to be thrombosed, was included in the incision. Two teaspoonfuls of pus were evacuated from the subdural space, but, on incising the cerebellum, pus was not obtained. After the relief of pressure natural respiration restarted. August 12: The patient died at 9 a.m.

Post-mortem.—Congestion of meninges and flattening of convolutions. There is a purulent infiltration on the surface of the left lateral lobe of the cerebellum at the junction of the superior and postero-inferior surfaces. This superficial abscess was adherent to the dura, which was covered by a layer of fibrin. The pus in the abscess had a foul odour. The thrombosis of the sigmoid sinus did not extend beyond the mastoid. (The pus from the superficial abscess of the cerebellum yielded on culture a Gram-positive diplo-streptococcus and a Gram-negative motile bacillus. The cultures had a foul odour.)

It is unfortunate that the post-mortem report does not state whether there was a fracture of the occipital bone just below the level of the lateral sinus in the position of the superficial purulent infiltration of the cerebellum.

Microscopic Examination.—The cochlea is healthy as are also the membranous structures in the vestibule. There is no meningitis in the internal meatus. There is hemorrhage in the perilymph space of the posterior canal just at the ampullary end. This hemorrhage appears to have come from the jugular bulb and to have extended from the ampullary end of the posterior canal into the perilymph space of the vestibule, and also along the smooth end of the posterior canal into the crus commune. It is possible that the condition of the labyrinth was due to injury at operation on the large extra-dural abscess in the posterior fossa around the sigmoid sinus. There is recent clot in the jugular bulb.

Remarks.—In the operator's opinion this case was not one of cerebellar abscess, but rather of circumscribed purulent meningitis in the posterior fossa following injury in the presence of middle-ear suppuration with cholesteatoma. Death was due to the circumscribed meningitis becoming general.

CASE 28: C.O.M.S. (Right); Complicated by Recent Injury and followed by Giddiness and Vomiting. Temporo-sphenoidal Lobe Trephined by General Surgeon, but no Abscess; later, Rigors; Right Labyrinth Junctional-ss and Facial Paralysis present. Radical Mastoid Operation (J. S. F.) Fistula in Lateral Canal; Extra dural

Abscess in Posterior Fossa. Neumann's Labyrinth Operation: Sinus opened, but no Obvious Thrombosis; later, Double Optic Neuritis and Rigors, with Signs of Cerebellar Abscess. Third Operation: Cerebellum explored with Negative Result; Right Internal Jugular ligatured; Slow Recovery; Three Months later Cerebellar Hernia ruptured. Fourth Operation: Cerebellum investigated with Negative Result; Death from Meningitis.—No. 192. T. M.—, male, aged thirty, first seen by J. S. F. in a general surgical ward April 17, 1913, with a history of discharge from the right ear for fifteen years. Seven weeks before admission patient, who is a miner, met with a head injury in the pit. The next day the discharge stopped and frontal headache began. Patient also had pain in the right ear and right occipital region. He continued to work for about seventeen days, but then sickness and vomiting set in and the headache became worse. Three days later he became giddy and tended to fall forward. He was admitted to one of the general surgical wards (Royal Infirmary, Edinburgh), March 28, and four days later the right temporo-sphenoidal lobe was trephined, but nothing was found (first operation). The headache improved after this until four days ago (April 13), when patient began to complain of pain in the right ear with giddiness and nausea. Last night he had a shivering attack and this morning he vomited. For the last four days his temperature has been elevated.

Examination.—Right external meatus contains foul-smelling blood-stained discharge. After syringing there is bulging of the posterior meatal wall, beyond which granulations can be seen. Mastoid tenderness present. Slight facial paresis on right side. Temperature 97.8° F., pulse 68.

Functional Examination. Cochlear apparatus: Weber lateralised to left (good) ear. Rinne absolutely negative on right side. Tuning-forks not heard by air-conduction by right ear. With noise-apparatus in left ear patient is quite deaf. *Vestibular apparatus:* Slight nystagmus to left and also to right, normal (?) Rombergism towards the right and backwards. No fistula symptom. Cold caloric test negative on right side after three minutes. Rotation not tested.

April 20: Patient admitted to Ear and Throat Department to-day. Temperature 101.4° F. at 8 p.m. Pulse 100. Patient lies on his back and is mentally bright. He sleeps well and answers questions promptly. Memory good. No restlessness. No headache. Pupils equal, react to light and accommodation. No signs of meningitis. Grasp equal on both sides. Pronation and supination test good. Smell and taste normal. No pain on percussion of skull or spine. Slight emaciation. No jaundice or enlargement of spleen.

Second Operation (J. S. F.).—Right mastoid cortex presented deep hollow filled with fibrous tissue. Antrum small and deep, contained mucoid pus. Malleus and incus not found. Lateral canal markedly eroded and facial nerve hanging free for a short distance. Oval window found empty. Neumann's labyrinth operation performed. In exposing sinus extradural abscess opened. Sinus wall showed granulations. Sinus traced back till healthy wall reached and slit up; no obvious thrombosis. Jugular vein not ligatured.

April 22: Temperature last night 99.4° F., pulse 76. To-day, temperature and pulse normal. Patient lies on left side. Slight nystagmus to left. The facial paralysis is now complete. April 25: Temperature subnormal. Nystagmus to left continues. Vomiting has passed off. Wound dressed to-day. No bleeding from sinus. Good reaction in wound. April 28: Vomiting continues; frontal headache; nystagmus to left and slight giddiness. Co-ordination good. Emaciation more marked. April 30: Temperature about 101° F. for last three days, pulse 68. Rigor this afternoon. Temperature 103° F. Dr. Sym reports double optic neuritis. Tenderness and swelling along right sterno-mastoid. Tongue dry and brown. Patient refuses consent to further operation. Frontal headache continues. May 3: Headache and vomiting continue. Rigors on May 1 and 2. May 7: Patient rather better, but evening temperature still elevated. Rigor on May 5. To-day patient examined by Dr. Edwin Bramwell, who found some inco-ordination of right upper extremity. Nystagmus to left. Grasp equal on both sides, though patient is right-handed. Slight tremor of the right hand. Dr. Bramwell considered that these signs were suggestive of cerebellar trouble.

Third Operation (J. S. F.).—Free bleeding obtained from torcular end of sigmoid sinus. No bleeding from bulb end. Tip of mastoid removed and sinus slit up almost to the bulb, but only slight bleeding obtained. Right internal jugular vein ligatured, the portion above the common facial being thrombosed and thickened. Crucial incision in cerebellar dura through the posterior wall of the sinus. Some turbid fluid with a slightly foul odour escaped. (*Staphylococcus aureus* and a diphtheroid bacillus on culture.) Right lobe of cerebellum explored with negative result. May 8: Temperature 101.8° F. last night after operation,

pulse 124. Patient had a good night. No rigor. No vomiting to-day. May 10: Temperature last night 102.4° F. No headache or vomiting. Wound dressed. Free bleeding from torcular end of sinus and a little from the bulb end. Slight hernia cerebelli. May 15: Temperature rises each evening to about 102° F. Attempt to syringe through bulb not successful. Patient complains of frontal headache. Cerebellar hernia larger. Lumbar puncture shows clear fluid not under tension. May 20: Headache persists and is only relieved by heroin. Patient vomited thrice last night. During last four days temperature has fallen to normal. Pulse 94. Hernia cerebelli still increasing. May 25: Evening temperature has risen to about 100° F. during the last five days, but vomiting and headache have been absent. Appetite good. Tongue clean and moist. Patient is getting brandy and says that it is doing him good. May 31: After being normal for four days temperature rose to 102° F. yesterday. Patient, however, feels well. June 12: Temperature between 97° and 98° F. since last report. Patient has been up for a week. The hernia cerebelli is smaller and the neck wound is healed. The wound behind the right ear is doing well. July 23: Both wounds are now quite healed. Patient sent to Convalescent House. August 3: Patient sent back from Convalescent, as he had a bad night after a supper of salmon, cheese and hot jam! Patient vomited and had a slight rise of temperature. On admission to-day temperature 98° F., pulse 60. There is slight bulging of the wound behind the right ear. August 8: Doing well. No headache or vomiting. The cerebellar wound does not bulge. August 15: Patient discharged. August 29: Patient reports, complaining of dizziness but no vomiting. His appetite is good and he sleeps well. On standing with eyes shut he tends to fall to the diseased side. There is no spontaneous nystagmus, but there is a pointing error to the right with the right hand and there is considerable bulging over the cerebellar scar. No signs of meningitis. Field of vision normal and fundus normal on both sides.

October 5: Patient again reports. There is now a hole in the thin skin over the cerebellar hernia and from this clear cerebro-spinal fluid drips. Patient states that this condition has been present for five days. Patient is getting fat and has been contemplating returning to his work in the mine. He was advised to come in for observation, but refused to do so. October 8: Patient admitted. Temperature 99.6° F., pulse 92. Violent fit of shivering this afternoon. Severe pain over right side of head. Temperature 102.8° F., pulse 100. Great flow of fluid from the cranial wound. Slight nystagmus to diseased side. Fundus normal on both sides. No stiffness of neck. No Kernig. Patient very excited.

Fourth Operation.—Lumbar puncture showed clear fluid under slightly increased tension. No increase in cells and no organisms. Right lobe of cerebellum investigated with negative result. October 10: Temperature remains about 102° F. Patient is restless and vomits frequently. He is getting morphia. October 12: Death.

Post-mortem.—Convulsions flattened. Vessels congested. Thick, creamy exudate at the base and extending down cord. Right lobe of cerebellum somewhat disintegrated, but no abscess.

Microscopic Examination.—The cavity formed by the radical mastoid operation is lined by squamous epithelium. The facial nerve is incorporated in the fibrous tissue on the inner wall of the tympanum. The hollow spaces of the cochlea contain pus and granulation-tissue, with some new bone-formation. The sacculus and utricle are not to be seen and the vestibule is filled with granulation and fibrous tissue. The meningitis in the internal meatus has passed into the stage of granulation-tissue formation in which the nerves are embedded. The bone surrounding the labyrinth is very vascular (paralabyrinthitis). The jugular bulb is thrombosed; the thrombus has become organised into fibrous tissue.

Remarks.—Although the symptoms and signs in this case pointed to the presence of a cerebellar abscess, this condition was not found. The patient apparently had localised leptomeningitis in the posterior fossa in addition to extradural abscess and probably sinus thrombosis. After the third operation he made a slow recovery. The septic condition of the posterior cranial fossa on the right side had, however, not been completely eliminated, and the patient returned with leakage from the cerebellar hernia. He was urged to stay in hospital, but refused to do so. Death was due to the spread of an apparently hitherto localised meningitis.

CASE 29: *Chronic Middle-ear Suppuration (Right). Radical Mastoid Operation: Extradural Abscess in Middle Fossa; Circumscribed? Labyrinthitis; Serous Menin-*

gitis with Organisms in Cerebro-spinal Fluid; Thrombosis of Superior Petrosal and Cavernous Sinus; Bacteremia; Sigmoid Sinus Explored; Temporo-sphenoidal Lobe Investigated; Death. Post-mortem: Meningitis, Abscess in Lung and Empyema.—No. 322. J. W—, male, aged ten, admitted August 14, 1915. The patient has had discharge from the right ear for years. A week ago the discharge stopped, and the patient complained of earache and headache and held his head tilted to the right side. For two days he has suffered from shivering and vomiting.

Examination.—Temperature 104.3° F., pulse 160, respirations 44. Patient is rather drowsy. The tongue is dry and furred. Left drumhead indrawn and opaque. Right external meatus full of fetid pus. Schwabach lengthened. Weber to right (worse) ear. Rinne negative right side. Patient can hear with his right ear (noise apparatus in left ear). No spontaneous nystagmus. Vestibular tests not carried out as patient is too ill.

First Operation a few hours after admission. Right mastoid sclerotic. Foul pus under pressure in antrum. Large extra-dural abscess in middle fossa with granulations on dura. (Films of the pus showed Gram-positive and also Gram-negative diplococci. In addition there were Gram-positive and also Gram-negative bacilli). Sinus exposed with the gouge and appeared healthy. Radical operation completed. Malleus and incus absent. Bony wall of external canal eroded. No reaction to cold lotion under the anæsthetic. Labyrinth operation not performed in view of retention of cochlear function. Lumbar puncture at the end of the operation evacuated fluid which was almost clear but under slightly increased tension. (Cultures from the fluid yielded Gram-negative diplococcus and a Gram-negative bacillus.)

Progress.—At 8 p.m. on the day of operation temperature 102.6° F., pulse 120, respirations 18. Patient lies with legs drawn up. No restlessness or irritability but Kernig's sign present on both sides, and the boy complains of pain if the head is moved or if pressure is made on the cervical spine. The left eye is prominent and pressure on the eyeball causes pain. The left pupil is larger than the right. August 15: At 8 a.m. temperature 102.8° F., pulse 116, respirations 26. Margins of right optic disc are indistinct. There is divergence of the right eye and also slight horizontal and rotatory nystagmus to the left. August 16: temperature 101.4° F., pulse 128, respirations 60. The patient is more drowsy. The spleen is not enlarged but there is dulness at the left base. A blood-culture was taken and the report (received two days later) stated that films showed diplo- and streptococci and bacilli. No growth was obtained.

Second Operation.—The right temporo-sphenoidal lobe explored on account of condition found at first operation. Negative result. The sigmoid sinus was split up but was found to contain only fluid blood. August 17: At 8 a.m. temperature 101.4° F., pulse 120, respirations 44. Patient *in statu quo*. At 8 p.m. temperature 103° F. August 18: Temperature 102° F. at 8 a.m., pulse 160, respirations 60. There is marked oedema of the eyelids on the right side with ptosis and dilatation of the right pupil. The boy cries out at times and then relapses into a comatose condition. Death at 8 p.m.

Post-mortem.—Septic thrombosis of superior petrosal and cavernous sinus on the right side. Early stage of same condition on left side. Lepto-meningitis limited to base of brain. No abscess of brain. Examination of the chest showed multiple abscesses in the lung with double empyema. Toxic changes were observed in the heart, kidneys, liver and spleen. Early pericarditis was noticed.

Remarks.—The operator believes that before the admission of this patient to hospital, meningitis and septicaemia were already present in addition to extra-dural abscess and circumscribed labyrinthitis, or, in other words, that the case was hopeless. Symptoms of cavernous sinus thrombosis were already present before the second operation, during which the portion of the sigmoid sinus below the upper knee was found to contain fluid blood. Septic thrombosis of the superior petrosal and cavernous sinuses may have been due to infection *via* the veins from the petrous bone. Unfortunately the condition of the jugular bulb does not appear to have been investigated at the *post-mortem*. In view of the condition of the lungs, pleural cavities and pericardium, it would appear probable that there was septic thrombosis of this region.

REPORTS FOR THE YEAR 1918 FROM THE EAR AND THROAT DEPARTMENT OF THE ROYAL INFIRMARY, EDINBURGH.

Under the care of A. LOGAN TURNER, M.D., F.R.C.S.E., F.R.S.E.

PART II.

A CASE OF AURAL BACTERÆMIA.

BY RUSSELL WEBBER, M.D., CAPT., M.C.U.S.

Clinical Assistant.

WHEN Mr. Richard Lake's article on Aural Bacteræmia appeared in the JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY, a case with very similar symptoms occurred in the wards under Dr. Logan Turner's care. We think it might be of interest to record this additional case.

Mrs. Agnes C—, aged twenty-one, was admitted April 8, 1919. Patient has had discharge from both ears several times during childhood. Of recent years she has had no trouble with the right ear, but several times following a cold the left ear has discharged for a time. Eight weeks ago she had one of these colds and the left ear has discharged continuously ever since. At times the discharge was profuse, at other times scanty or entirely absent. Two days ago she called in her family physician because of pain over the left mastoid and a feeling of sickness. Her temperature was then 99·2° F. On the day previous to admission she felt somewhat better, but her symptoms returned, giddiness being especially pronounced.

On admission temperature 103·2° F., pulse 100. Heart and lungs are normal. General appearance that of a severely ill person—colour ashy grey, eyes unusually bright.

Aural Examination.—*Left ear:* Meatus filled with pus of mucopurulent character. After syringing, the M.T. was found to be bulging, congested and macerated, but no perforation could be made out. There was very decided mastoid tenderness. *Right ear:* Small amount of pus in meatus. A large anterior perforation seen after syringing. *Tuning-fork tests:* Weber lateralised to right; Rinne negative on both sides; C. 64, C. 128, C. 2048, C. 4096 all heard equally well on both sides by air-conduction.

No other tests carried out as patient was too ill. In view of the fact that the case did not resemble an ordinary mastoid complication a blood-culture was taken.

April 9, 1919: Patient's temperature was 103° F. yesterday evening, but came down during the night to normal; it rose again at 8 a.m. to 102° F. and patient had a rigor. She says she has never had a rigor before but has previously felt cold. She looks well and is not flushed. Tongue is furred, but moist. No sign of meningitis. No spontaneous nystagmus on looking to the right or directly forward and very slight to the left.

Operation at 11 a.m. by Dr. J. S. Fraser. Chloroform and ether anaesthesia. Incision behind left ear as for radical operation. Superficial tissues and cortex normal; diploetic mastoid with cells filled with watery fluid; no pus in mastoid process; sinus exposed over an area about the size of a threepenny-piece—it appeared perfectly soft and normal, dark blue in colour; dura of middle fossa exposed, and it, too, appeared normal. Mastoid antrum opened and only one drop of pus seen. Outer end of bridge removed; it was then seen that the left M.T. was pale, pinkish-grey in colour, bulging slightly, and that there was a perforation in the anterior portion. Cavity packed with iodoform worsted and wound left open.

Laboratory Findings.—*Blood culture:* Gram-positive diplococcus. Heavy growth. Gram-positive bacillus. *Urine:* Acid, Sp. gr. 1·025; albumen decided cloud; sugar negative.

April 10: Patient much better this morning; had good night's rest. Temperature at 8 a.m. 99·6° F., pulse 92. She complains of nothing. Patient examined by Dr. Eason of the Medical Department, who finds nothing apart from the aural condition to account for her symptoms. Second specimen of blood taken for culture. *Blood count:* Moderate leucocytosis, 11,250.

April 11: Highest temperature recorded to-day 99.6° F. Eyes examined by Dr. Sym: "A curious oedematous aspect of the retina around the *right* disc; slight undue fullness of veins in both discs—very slight indeed and not with certainty pathological."

Second blood report: Gram-positive diplococcus. Heavy growth.

April 12: In morning patient felt quite well. Temperature rose to 101° F. in afternoon. Patient's colour a muddy white.

April 13: Temperature at midnight was 101.6° F., pulse 116; at 8 a.m. temperature 98.8° F. Patient feels quite well.

April 14: No further rise of temperature; 97.8° F. at 8 a.m., pulse 100. *Blood-count*: leucocytes 7,500. Fresh blood-culture taken.

April 15: Temperature has remained normal and patient feels quite well. *First dressing*: Scant discharge on dressings. Wound looks clean, healthy granulations in cavity; re-packed with iodoform worsted.

Blood-culture report: "No growth found."

April 16: Temperature remains normal and patient continues to feel well. Tongue remains coated despite aperients. *Urinalysis*: Acid, 1020; slight trace albumen; negative for sugar.

On April 24 patient had an attack of follicular tonsillitis which lasted for four days; the closure of the posterior wound postponed. On May 7 the posterior wound was closed under (CHCl₃) anaesthesia.

Discharge continued for some weeks from the left meatus. The patient was last seen on June 10, 1919, and the M.T. was found to be completely healed. As no meatal flap was made the opening through the posterior meatal wall into the antrum has not remained patent. Hearing is very good.

SOCIETIES' PROCEEDINGS.

ROYAL SOCIETY OF MEDICINE—OTOLOGICAL SECTION.

May 31, 1918.

President: H. J. BANKS DAVIS, M.B.

Abridged Report.

A Series of Consecutive Cases in which the Mastoid has been operated on for Acute Suppurative Inflammation. B.I.P. (bismuth, iodoform, and liquid paraffin) inserted, and the External Wound Sutured in its Entire Length at the Close of the Operation.¹—Herbert Tilley.

THE PRESIDENT: Does Mr. Tilley only smear the preparation in the bony-cavity, or does he plug the wound with it? I have used too much B.I.P. in some of my cases, and my ward sister told me that cases in which a plug was used did not heal well. The less often you dress these cases the better. Poisoning following the use of this substance is mostly due, not to the iodoform, but to the bismuth ingredient, which produces a blue line on the gums, nausea and abdominal pains. I have seen several cases which were identical with those of lead poisoning.

¹ The complete paper appeared in the JOURNAL OF LARYNGOLOGY, RHINOLOGY, AND OTOTOLOGY, March, 1919, p. 73.

Dr. DAN MCKENZIE: Bismuth-iodoform paste makes a wonderful difference to a cortical mastoid case, rendering reactionary inflammation a thing of the past. One or two cases of iodoform poisoning have been reported, but I do not know of any at the Central London Hospital, though we have used it in a large number of operations. I have used the paste for radical mastoid cases. It does not seem to retard the growth of the graft, which is found to flourish in the midst of the paste. I have even filled up a brain abscess-cavity with it, the only inconvenient sequel having been the discharge of the paste for some time afterwards. The case did well. I do not altogether support Mr. Tilley's plan of closing the whole of the wound at the time of the operation; I think it wiser to omit the stitches at the lower end and leave a drain in for a couple of days, because one is never sure of having got to the end of the disease. There may be retaining pockets, and closure of the whole wound in that case might upset the balance between the exudation from the raw surfaces and the organisms and their products in the open cavity, even in the presence of iodoform, which, in spite of what bacteriologists say, is a powerful antiseptic.

Mr. W. STUART-LOW: In Mr. Tilley's cases the line of incision is very long and very far back, and there is a considerable thickening—indeed, in half of the cases there is an evident keloid; in two this is exceptionally thick. This keloid condition is very probably a result of the bismuth in the B.I.P., as the powdered bismuth together with iodoform and oily particles between the edges of the healing wound must be somewhat of an irritant. I have heard of surgeons having X-ray pictures taken of limbs in which B.I.P. has been applied and the dark shadow clearly showing masses of unabsorbed bismuth lying in the tissue and between the ends of the bones in defectively united fractures. If this is so in the limbs, it must be so in the bony cells of the mastoid and ear cavities. I am sure it must be detrimental to the hearing to have the B.I.P. paste left on the meatus, attic, and tympanic cavity. I tested the hearing in these cases shown to-day, and found it defective in most of them to the extent of 25 per cent. Under my treatment the average time is eight days when the patient passes out of the hospital with the wound quite healed and the hearing completely restored. I am very particular to remove all dressings from the ear on the third day, substituting a dressing with an ointment composed of white wax 1, ointment of ammoniated mercury 3, which is applied warm to the wound and makes a perfect shield. If there is one place in the body where B.I.P. should never be used it is in the ear.

Mr. H. L. WHALE: With regard to poisoning, there has been a suggestion of that where the wound has been near the mouth, the idea being that some was swallowed: one case in our hospital died from what might have been iodoform poisoning. Where treatment is near the Eustachian tube, or the infundibulum or the mastoid, this is a possibility to be borne in mind.

Dr. JOBSON HORNE: B.I.P. may be an excellent dressing for ordinary operations, but it is not safe to jump to the conclusion that what can be used with impunity in other parts of the body is also good for a special region such as the ear. Possibly this treatment may be useful in exceptional cases, but the results, even if they do take a little less time, do not show any advance on those obtained by other technique.

Mr. RICHARD LAKE: I have used iodoform on every mastoid case I have done, without exception, and I have been doing these operations for quite a long time now. I will relate one case because, like others, I have,

of course, made mistakes. A lady was brought to me with an acute mastoid condition. I opened it, and healing occurred in a short time. She came up to see me again, complaining of exactly the same symptoms. I did not examine her thoroughly, but told her to go straight into the nursing home, and I would come and operate on her there next day. When I took off the shell of the mastoid, there were the trabeculae already formed, and lying in this, dry cells; there was no pus nor any inflammation, but there were the iodoform grains, which had remained there three or four years. I have no doubt that the lady, if she had been skiagraphed, would have shown the dark shadow to which Mr. Stuart-Low alluded.

MR. SOMERVILLE HASTINGS: My experience of B.I.P. has been limited to its removal from a good many parts of the body, including one mastoid, on which the operation was performed three months previously. The case was that of a soldier who was very ill with meningeal symptoms, and I opened up his mastoid freely and removed a mixture of bismuth paste and pus which I found there, in contact with the dura. The symptoms cleared up, and he is now well.

MR. HUGH JONES: I have used B.I.P. for twelve months for the radical operation. I find it so often gets between the flap and the underlying surface, interfering with healing, that I have now stopped using it for the operation dressing. At the first dressing and afterwards when healing of the soft parts has taken place I use B.I.P.; this is an easier process than packing the cavity with gauze, which children resent. In two or three of Mr. Tilley's cases I would not have had the courage to close them up entirely at once; for instance, where the sinus was exposed, I should have made an opening into the meatus, then closed the posterior opening. I agree that the less B.I.P. is used—within limits—the better the results will be, and the more of it is used, the greater will be the interference with healing.

DR. KELSON: It has been a distinct advance. I noticed that the cases Mr. Tilley showed to-day were in children, also that they were acute cases, by which I understand there was no previous ear disease. That being so, I am not certain than in the hands of a skilled and experienced surgeon, who was sure of removing all the disease and had the courage to close them up without any B.I.P. at all, they might not have healed; and it does not prove that the trick was done by the iodoform. We had, at the London Throat Hospital, a house-surgeon who thought he would cure all mastoid cases with iodoform, and dressed them all with it. Many of them did very well indeed. But I had later to say that in certain of my cases no iodoform was to be used, as it resulted in very exuberant granulations, and the discharge was blocked. When spirit drops were substituted these cases did well.

DR. JAMES DONELAN: Dr. Dan McKenzie touched the weak spot in the method, and some time there will be a concealed focus which will give trouble. I have had a case in which I had to remove bismuth from over such a focus.

MR. W. M. MOLLISON: My experience with B.I.P. is small. I tried it some months ago in children, but was disappointed with the results. From what I have heard to-day it is probable I used too much; I put in as much as I could, and sewed up the wound.

MR. TILLEY (in reply): I never cut a flap in an acute cortical mastoid operation; I have not seen occasion to do so. An important point in the use of this preparation as laid down by Prof. Rutherford Morison, and as proved by some of my earlier cases and by my subsequent successes,

is that one should not put in a mass of B.I.P., but use it rather as a smear. If you put in a large quantity you may have to dissect out the bismuth afterwards, and there will be a discharge of iodoform granules from the drum perforation for some weeks after the operation. If you dry the wound and smear the parts fairly freely with the B.I.P., you will do the right thing. I agree with Dr. McKenzie—it does not kill the skin-grafts when these are used in the radical operation. I must take exception to Dr. McKenzie's statement that when operating on acute cases you never can be sure you are at the end of the disease. Humanly speaking, you *do* know when you have dealt with all the suppurating cells, and certainly when the disease is extensive you have removed the whole mastoid, including the tip. So I do not think we need fear that there will be any complication following the use of this preparation and immediate closure of the wound—*e.g.* that the lateral sinus will become thrombosed because you have overlooked some focus of suppuration. I agree with Dr. McKenzie that, occasionally, wounds will be found to resent iodoform: there is a personal idiosyncrasy against iodoform. I take exception to Mr. Stuart-Low's statement that the cases I showed all have keloid: some of them have no trace of it. And a keloid scar has nothing to do with this particular method; one has often seen it when another or no antiseptic has been used. In a few months the keloid will get white and eventually disappear. I have not seen a case in which it caused any trouble whatever and in which it did not eventually shrivel down into a white scar. If keloid occurs in a lady who is very distressed about it, it can be got rid of by the application of radium. Mr. Stuart-Low also said that 25 per cent. of these cases have loss of, or defective, hearing. That is a misconception; they hear extraordinarily well. To three of the boys I spoke in a whisper, asking them an unexpected question, and the correct answer was prompt. It is misleading to say the cases shown hear worse than after the cortical operation without the use of B.I.P. I have not seen a case of iodoform poisoning in my own practice, but I saw one in the King George Hospital, in which a patient had a yellowish-green membrane on the palate and extending to the inside of his cheek, and looking something like a large diphtheritic membrane. The mucous membrane bordering the membrane had a smoky aspect. It was a very puzzling case until the urine was tested, and then bismuth was found in it. After the B.I.P. was stopped, the membrane disappeared. With regard to age, most of my cases during the last six months have been in children, with the exception of one or two private patients and four soldiers. The best consistence of B.I.P. is that of ordinary cream. With regard to Mr. Hugh Jones's remarks on the granulation-tissue, what I take to happen is this: When you have smeared your wound with B.I.P. and sewn it up, you get blood filling the mastoid cavity; the blood cannot decompose, and eventually you will get ordinary granulation-tissue penetrating the aseptic blood clot. I recently performed an external operation on a chronic frontal sinus empyema on the right side. It became infected from the suppurating left sinus, and in three weeks' time I had to open up the latter. On examining the right sinus I found the granulations were pale and of tough consistence, unlike the granulations I have seen in any other bony wound. That was the only occasion on which I have had occasion to open up a wound after B.I.P. has been used. Dr. Kelson mentioned some points about immediate closure of the wound. If I had not had complete faith in the antiseptic I would not have dared to close the wound at once in some of these cases with excessive oedema. Three of

my patients had a "bacon-rind œdema" $\frac{1}{2}$ in. thick, but after my earlier cases I had such confidence in B.I.P. that, after thoroughly cleaning and drying the wound, I smeared it with the antiseptic cream and closed the wound, and I propose to continue the practice until I come across the inevitable case of a "hidden pocket," which Dr. McKenzie speaks of.

Chronic Suppuration of the Middle Ear and Cholesteatoma treated by Radical Mastoid Operation, with Retention of the Cholesteatoma Matrix.—J. Dundas Grant.—The patient, a young married woman, was first seen by me on April 12, 1918. She had suffered with ear disease since childhood and was now subject to attacks of giddiness with headache. On the removal of a crust hiding the upper part of the membrane it was found that there was erosion of the outer wall of the attic and probably of the bony casing of the labyrinth as a result of cholesteatoma. The postero-superior part of the cavity was filled with epithelial *débris* and a mass was extracted. The attacks of vertigo diminished, but recurred as the cholesteatomatous desquamation proceeded. I therefore did the *radical mastoid operation* on May 18. The "bridge" had already been eroded away. I cleared out the desquamative *débris* very carefully so as not to destroy or dislodge the matrix, which was fairly white and sufficiently homogeneous and adherent to pass muster as a skin-graft. The plug was removed in four days' time: the parts were found to be exceptionally dry, the matrix was adherent and has been daily mopped with biniodide and pure spirit. At the present time (May 31) it forms a yellowish-white lining to the postero-superior part of the cavity, but of course the bare surface of the osseous "ridge" is not quite covered with the young velvety granulations, though at the margin of the raw surface epithelialisation is already taking place.

Mr. W. STUART-LOW: I have made it a practice to do the same thing myself when the lining is evident and shiny. The result is exceedingly good, both as regards recovery from the operation and restoration of hearing.

Mr. MARK HOVELL: Is there any special advantage in iodoform over iodine preparations? In course of time the other iodine preparations will become absorbed and disappear, whereas my experience is that iodoform does not disappear.

Dr. KELSON: I tried this method in some cases, but in the majority of them, when the spirit drops were stopped, the discharge came on again soon afterwards.

Dr. JOESON HORNE: It would be premature to express an opinion upon the result of this case. The reason of any difference of opinion as to the advisability of leaving *in situ* the lining membranes of a cholesteatoma is easily explained. The term "cholesteatoma" is regarded in a different sense by different persons. A true, typical cholesteatoma is a very rare, but very definite, pathological process in the mastoid bone. To leave the lining membrane when operating upon a true cholesteatoma could not, from the very nature of the disease, bring about a cure: on the contrary it would promote a recurrence. If, on the other hand, the term "cholesteatomatous" is to be applied to cases having only a most remote resemblance to a true cholesteatoma, then it does not matter very much what is left behind as a lining membrane.

Dr. DUNDAS GRANT (in reply): It is not very unusual to see the bridge and the outer wall of the attic eroded away as the result of the development of cholesteatoma. I think such cases are generally suitable

for retention of the matrix, and the results have been permanent. I ask you to assume for the moment that it is a long-standing mechanical pressure which causes the erosion of bone, and that it is only in long-standing and neglected cases that "cholesteatoma" with a well-developed matrix has a chance of forming.

Orchitis and Deafness.—**Dan McKenzie.**—A male, aged sixty-two, came to consult me on March 12, 1918, with the following history: A few weeks previously he had been attacked with "influenza," which necessitated his keeping in bed for several days, the temperature rising to 104° F., and there being general muscular aching, but no headache, and none of the symptoms of "cold." A week after he had recovered from this attack and had gone back to business he woke up one morning to find that he had gone absolutely deaf in the right ear. There had been no previous indication of any ear trouble, no tinnitus, no discharge. And there never had been any vertigo, either before or since the deafness appeared.

On examination the patient's statements were confirmed: the hearing in the right ear was entirely abolished, that in the left ear being normal. The caloric reaction was normal. With cold water (22° C.) nystagmus appeared in thirty-five seconds and was accompanied with normal vertigo.

The patient's natural anxiety was to know whether the left ear was likely to go suddenly deaf as the right had done. But I could not venture upon any opinion until he casually let fall the remark that during the "influenza" his testes had become enlarged and tender for a few days, one after the other. There was nothing in his past or present history to account for this orchitis, which had passed away without any local sequela, any more than there was anything to explain the onset of sudden and complete deafness. But it occurred to me that he had been attacked with the virus of mumps, which, as it is known occasionally to do, had spared the salivary glands but had set up orchitis, and that what we had to deal with was probably nerve-deafness from mumps. I therefore confidently assured my patient that the hearing in his sound ear would not be suddenly blotted out as that in the right had been.

Deafness in mumps is not infrequently unilateral, and its onset, though sudden, is unaccompanied by vertigo. The nature and situation of the lesion in mumps-deafness is unknown, it would seem, but the virus evidently selects the acoustic and spares the vestibular element of the auditory-canalicular apparatus.

In view of the above case, the possibility of sudden deafness following ovaritis becomes obvious.

Mr. SOMERVILLE HASTINGS: The case is useful to many of us, because cases which often cause great difficulty are those of internal ear deafness, sometimes unilateral, in which a cause cannot be found, many of which come on suddenly. In future I shall always ask whether there has been swelling of the testicle in these obscure cases.

Mr. W. M. MOLLISON: In cases of unilateral deafness of rapid onset toxic absorption is doubtless often the cause. One always asks for a history of mumps, but a very small proportion of patients with unilateral deafness have mumps. I think in this case the orchitis is an expression of mumps. The origin of the toxic absorption is not known in most cases. It has been said that if unilateral deafness is due to a toxic absorption, there is no reason why it should not get well. I have recently seen a case which shows that recovery can occur. The patient

was a man who was almost entirely deaf in the right ear and I gave a hopeless prognosis. He came back to me after six months, with the hearing perfect on that side.

The PRESIDENT: A sister at a London hospital suddenly went giddy and became very deaf, and I was asked to see her. She had lost a good deal of hearing. Two days later she was so much worse that she was unable to hear anything at all in that ear. She had intense tinnitus. The onset was so sudden that I hoped it might be hysterical. On my advice she went away for a month, but returned no better. She saw another aurist, and a very hopeless view was taken of the case. However, her hearing has now largely come back, though it is not so good as before the attack. I do not know what the explanation was, but the moral is, not to be too certain that these people will not recover hearing.

Dr. KELSON: My experience is that this deafness from mumps is a distinct entity and with a bad prognosis, and that if they do not recover in six months they are deaf for ever. If deafness persists on both sides, there is not much to be done for them but lip-reading.

Dr. DAN MCKENZIE (in reply): An interesting question has been raised in regard to unilateral deafness due to toxins. There are toxic conditions which affect one side only. One is apt to think that if it is bilateral it is due to a general condition. But otosclerosis, a bilateral disease, is very probably due to a local condition or cause. There is no rule in that regard; we must find out everything individually, in detail. As Mr. Mollison says, a large number of the cases are due to a toxin which has a specific action on the auditory nerve or the cochlear ganglion, inducing a lesion which causes deafness. I agree with Dr. Kelson that most cases of mumps-deafness are permanently deaf.

ABSTRACTS.

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Authors of Original Communications on Oto-laryngology in other Journals are invited to send a copy, or two reprints, to the JOURNAL OF LARYNGOLOGY. If they are willing, at the same time, to submit their own abstract (in English, French, Italian or German) it will be welcomed.

PHARYNX.

The Clinical Value of the Sign of Garel.—A. Pagnat. "Journal de Médecine," March 25, 1919.

Dr. Garel of Lyons in 1892 called attention to prolonged painful dysphagia in syphilis and showed its value as a diagnostic sign. "Every patient complaining of dysphagia at the level of the tonsils and the posterior part of the throat lasting at least three weeks should be regarded as syphilitic." The author's experience has confirmed the dictum of Garel. Several illustrative case-histories are quoted. The dysphagia is pharyngeal and felt at the level of the tonsils. It is not felt in the larynx, a fact which may distinguish it from tubercular laryngitis. It may last from three weeks to four months and is only of diagnostic significance when it has lasted over three weeks. This symptom is found in all three stages of syphilis. If a patient should complain of prolonged dysphagia in the upper part of the throat the possibility of syphilis should always arise in the surgeon's mind. According to the author, syphilis is a much commoner cause of dysphagia than tuberculosis or cancer of the pharynx. *J. K. Milne Dickie.*

Tonsillectomy with the La Force Hemostat Tonsillectomes.—La Force. "The Laryngoscope," May, 1919, p. 280.

In the paper La Force makes no reference to the work and instruments of William Hill and G. J. F. Elphick. The methods of using La Force's instrument appears to be very similar to that advised by the British laryngologists. *J. S. Fraser.*

Surgical Treatment of Cancer of the Tonsil.—John McCoy. "The Laryngoscope," July, 1919, p. 422.

McCoy reports five cases of cancer of the tonsil. The operative technique is as follows: A Wassermann is taken, also a section from the growth for microscopic examination. The patient is then referred to a dentist. Later an incision about $2\frac{1}{2}$ to 3 in. long is made at the anterior border of the sterno-mastoid muscle and the glands overlying the jugular are dissected out. The facial vein is ligated in two places and cut. The external carotid artery is then tied off. The dissection is continued until the posterior belly of the digastric comes into view. The muscle is pushed aside, as are also the stylo-hyoid and the styloglossus, when the superior pharyngeal constrictor comes into view. The field of operation is then changed to the throat. Through the mouth the tonsil and infiltrated areas are thoroughly dissected out. An incision is then made through the superior constrictor in the neck, and a strong light is thrown into the wound through the opening in the mouth and

also through the opening in the neck, enabling the surgeon to remove thoroughly any portion of infiltrated tissue that may be seen. This is especially looked for at the base of the tonsils, where it connects with the tongue. In the later operations McCoy resected two or three inches of the sterno-mastoid muscle and the tissues about it for the purpose of preventing recurrence in the neck. The wound in the neck is then partly closed, after packing with gauze, and allowed to heal by granulation. Radium was applied during the process of healing in all cases. At least two of the five cases appear to have done well.

J. S. Fraser.

NOSE.

Some Experiences of Maxillary Sinusitis.—Fr. Pontoppidan (Randers).
 "Acta Oto-laryngologica," vol. i. fasc. 1, 1918.

An account of the symptoms, physical signs, and treatment of 175 cases met with in the last ten years. The ages of the patients ranged from ten to seventy-nine years, the largest percentage belonging to the third and fourth decade. In 25 per cent. both sides were affected. In only four cases was the disease certainly of dental origin. Headache was complained of in 40 per cent. of the cases, and in one of them it possessed all the characters of a migraine, which completely disappeared after operation. In some cases the pain spread to the arm and chest of the corresponding side. In 20 per cent. of the patients there was evidence of interference with the general health and nervous symptoms, such as aversion from work, rapid fatigue following mental exertion, disturbed sleep and bad dreams, with more or less pronounced mental depression.

In 152 cases the result of transillumination was noted, and was positive in 142 of these; in the remaining 10 there was no opacity although purulent secretion was present in the sinus. Exploratory puncture through the inferior meatal wall failed in 2 of the 145 cases owing to excessive thickness of the bony wall. In 3 cases aspiration failed on account of the viscosity of the secretion, while lavage was successful. In 19 per cent. of the cases the disease was complicated by trouble in other accessory sinuses.

For the treatment of this condition the author has now abandoned all methods with the exception of aspiration, puncture and lavage, and radical (Luc-Caldwell) operation. Sondermann's method of aspiration is of use only in the acute and early cases. Puncture and lavage, repeated from one to fifteen times, was successful in 25 per cent. of the writer's cases, but if no appreciable improvement follows four lavages he usually proceeds to the radical operation, which he now performs under local anæsthesia. The latter he considers a great advantage, mainly on account of the bloodless field.

Thomas Guthrie.

Cerebral Abscesses of the Frontal Lobe Originating from the Frontal Sinus and other Intracranial Complications Resulting from Inflammatory Processes of the Nasal Accessory Sinuses.—F. Leegaard. "Annals of Otology," xxviii, p. 95.

A long paper, describing three cases of cerebral abscess dependent upon frontal sinusitis occurring in one clinic in two years. One other case occurred in the previous twenty-three years. The author discusses exhaustively the frequency, symptoms, diagnosis and treatment, and then

proceeds to discuss other intracranial complications of sinusitis in connection with the maxillary (six cases) and sphenoidal (one case) sinuses. An exhaustive bibliography is given. *Macleod Yearsley.*

Subluxation of Inferior Turbinal in the Treatment of Nasal Obstruction.—**Amédée Pognat.** "Rev. de Laryngol., d'Otol., et de Rhinol.," May 31, 1919.

The results of the treatment of nasal obstruction when due to a hypertrophied inferior turbinal compare unfavourably with the results of submucous septal resection when the septum is the offender. Partial turbinectomy does not relieve the obstruction. Total turbinectomy involves a risk of rhinitis sicca or atrophica. Galvano-cautery gives no permanent cure. The reporter, struck with the German idea of narrowing a patulous nasal vestibule in atrophic cases by inward subluxation of the inferior turbinal, adopts the converse plan when he wishes to increase the air-way, and by a bloodless submucous fracture presses the bone towards the naso-antral wall. He is enthusiastic as to the results.

H. Lawson Whale.

Idiopathic Epilepsy due to Empyema of the Antrum of Highmore; Operation; Recovery.—**J. Clarence Keeler.** "The Laryngoscope," August, 1919, p. 484.

Male, aged thirty-four, diagnosed as "idiopathic epilepsy." His hearing was impaired; his gait was staggering; he had attacks of dizziness. After a convulsion there was a thick, light-coloured, offensive discharge from the nose. Examination revealed pus over the left inferior turbinate. Proof puncture positive. Irrigation was continued daily. Hearing and general health improved greatly. Irrigation was discontinued four days, when he again became dizzy; his hearing again became impaired and he was apprehensive of another convulsion. Caldwell-Luc operation was performed. Recovery was rapid.

J. S. Fraser.

LARYNX.

Stammering and Voice Defects.—**Mabel V. O. Oswald.** "Lancet," vol. ii, 1919, p. 355.

The author, who acted as speech specialist to the 1st Southern General Hospital, Neurological Section, Birmingham, is introduced in a note by Dr. J. N. Robins. In this note he suggests that there are two schools of thought on the treatment of stammering: (1) Dealing with the psychic cause and leaving the symptoms (stammering, aphonia, etc.) alone; and (2) dealing with the symptoms and leaving the psychic cause alone. Both are probably wrong, and a middle course should be taken. The authoress introduces her subject by saying that treatment has hitherto been experimental, mostly directed to the correction of physical disabilities. Such experimental treatment is to be deprecated. She considers that it has now been established that stammering is dependent on a psychic cause, which requires to be dealt with adequately, the physical disabilities being secondarily engendered. In her experience, however, the removal of the psychic cause in cases of stammering does not necessarily mean that the symptom disappears automatically, probably because "an incorrect habit of breathing and speech production has been

acquired." Treatment is therefore best on a combined system, viz. respiratory and voice exercises, plus strong suggestion ("speech relief"), whilst the psychic cause is dealt with by "mental exploration." In the case of young children, where the stammer is imitative, breathing and voice exercises with strong suggestion are sufficient, "probing into their subconsciousness being unnecessary." Stress is laid on the importance of at once treating a stammer in young children. *Macleod Yearsley.*

Two Unusual Cases of Foreign Body lodged in the Upper Respiratory Tract.—Jno. F. Culp. "The Laryngoscope," May, 1919, p. 292.

CASE 1.—Female, aged sixty-two, complained of a pricking sensation in the throat and difficulty in swallowing. These symptoms came on three or four days after eating some pineapple. On careful examination a black line, about one-eighth of an inch long, was seen at the bottom of the glosso-epiglottic fossa. When grasped by a pair of forceps the body proved to be a metallic substance. After some manipulation it was removed, and proved to be a sewing-needle with a large part of the head missing. On seeing the needle the patient remarked, "That is the needle that stuck in my left knee eleven years ago." In endeavouring to extract the needle she broke off the greater portion of the head, and the rest of the needle disappeared. About three weeks before Culp saw the case she had a distinct pain and soreness, with some swelling in the posterior border of the left sterno-mastoid muscle. Culp thinks these symptoms were due to the presence of this migratory needle, which finally lodged itself in the tissues at the base of the epiglottis.

CASE 2.—Girl, aged three, was eating while playing in the kitchen, when she suddenly was seized with a fit of choking and was almost suffocated. A couple of hours later the child was breathing very well. Within twenty-four hours, however, the breathing again became laboured. Culp found the child very cyanotic, pulse uncountable, extremities cold, and breathing most laboured. A low tracheotomy was immediately performed, and after separation of the edges of the trachea a substance was seen moving rapidly to and fro, with a vast quantity of mucus. With considerable difficulty this substance was caught, and proved to be a grain of corn, swollen to about three times its normal size. The subsequent history was comparatively uneventful. *J. S. Fraser.*

Malignant Tumour of the Larynx: Operation by Direct Laryngoscopy.—J. W. Jervey. "The Laryngoscope," July, 1919, p. 428.

Jervey records the case of a male, aged fifty, who for eight or ten years had been troubled with an obstruction in his throat which interfered with free breathing. In the past few years he had had some soreness and difficulty in deglutition. Indirect laryngoscopy showed a deep red, slightly lobular tumour of dense formation, the size of the distal joint of the thumb, attached to the left posterior border and ventricular surface of the epiglottis. Jervey concluded that the growth was benign and advised removal under local anæsthesia with forceps and snare, using a Jackson direct laryngoscope, with the patient in the Johnston position. Recovery was prompt and there has been no recurrence, eight months having elapsed. Lynch, Chief of the Pathological Department of the Medical College of South Carolina, reported that the tumour was "apparently endotheliomatous and therefore malignant and likely to recur." *J. S. Fraser.*

Stereoscopic Photography of the Larynx.—J. GareL. "Rev. de Laryngol., d'Otol., et de Rhinol." June 15, 1919.

The earliest attempts were those of Czermak in 1869, and even at this early date he used stereoscopic twin-lenses. The author published some details in 1899, and has since then greatly developed his technique. As regards illumination, he has after thorough trial discarded the Voltaire arc-lamp, and on the whole prefers an incandescent bulb to sunlight.

A series of faithful reproductions of the author's later efforts and a detailed account of technicalities in developing and exposing comprise the greater part of this monograph, which cannot be briefly abstracted with any justice to the author.

H. LAWSON WEALE.

Bilateral Paralysis of the Recurrent Laryngeal Nerve.—R. MAUPETIT. "Rev. de Laryngol., d'Otol., et de Rhinol." June 30, 1919.

In the interesting case here recorded, apart from cough and the laryngoscopic image, the only definite objective evidence was that of a shadow in the upper thoracic region, suggesting a mediastinal tumour.

Eventually, and before any diagnosis had crystallised out of a most confusing symptom-complex, tracheotomy was performed for urgent dyspnoea. At the depth of 2 cm. the passage of the tube was resisted. On slight extra pressure the resistance suddenly gave way, with the outflow of a tumblerful of fetid chocolate-coloured pus. Despite temporary relief, the patient died.

No autopsy was obtainable nor was the pus examined. The author concludes that a mediastinal abscess, involving both inferior laryngeal nerves, had been pierced by the tracheotomy-cannula when the abscess was on the point of perforating the trachea.

H. LAWSON WEALE.

EAR.

Studies of the Ear as a Motion-Sensing Organ.—Lieut. Col. E. R. LEWIS. "Annals of Otology," xxviii, p. 10.

An exhaustive paper which requires reading *in extenso* for its full appreciation. So far as it can be abstracted, the following are the author's conclusions: The general condition of the aviator's ears, nose and throat must be good; the ground soldier can stand still, the aviator cannot: motion-sensing therefore assumes great additional importance to the aviator. Of the senses concerned in motion-sensing, the vestibular sense is the only one whose utility remains constant: hence the necessity of determining the aviator's possession of requisite vestibular sense.

Vestibular tests not only determine functional condition of this portion of the internal ear but give definite information concerning the integrity of parts of the bulb, pons, cerebrium, and particularly the cerebellum.

Observations made in an extensive series of blindfold experiments on normal persons, persons with nonfunctionating vestibular apparatus, persons lacking hearing only, and persons with impaired deep sensibilities, indicate that perception of motion in a linear direction (*a*) during acceleration and (*b*) during retardation, is sensed most accurately by those with functionating vestibular apparatus: (*c*) at a sustained rate of speed is sensed accurately by each group except those lacking

deep sensibility: (*d*) arrest of motion ensuing upon motion in a linear direction is most accurately detected by the group lacking vestibular function but in possession of unimpaired sensibilities.

Macleod Yearsley.

Ear Diseases and Lumbar Puncture.—G. Holmgren (Stockholm). "Acta Oto-laryngologica," vol. i, fasc. 2 and 3, 1918.

Following Babinski the author has made a systematic study of the effects of lumbar puncture upon different varieties of diminished hearing of nervous and combined types. The present article deals with three cases of nerve deafness due to detonation. Two of them were typical cases of diminished hearing following exposure to gun-fire: in both of them the hearing remained quite unchanged for fourteen days after lumbar puncture, but later underwent considerable improvement. In one of them it had improved in six weeks from 4 to 8 metres for the whisper, and in nine months to 9 metres; in the other from 3 to 8 metres in a fortnight, and was slightly better four months later. The third case, although belonging to a decidedly neurotic family, did not himself show evidence of neurosis. Before lumbar puncture repeated examinations of the hearing showed some variations within moderate limits, and the results of Bárány's pointing test were also always abnormal, the degree of abnormality being very variable. There was outward deviation of one or both wrists and shoulder-joints, which was very little affected by rotation or caloric stimulation. A few days after lumbar puncture the hearing had improved distinctly and the deviation had greatly diminished. A month later the improvement was still more marked.

Thomas Guthrie.

Primary Fibro myxo-angio-endothelioma of the Middle Ear.—A. Calabresi. "L'Ospedale Maggiore," February 28, 1919.

A child, aged three, was admitted to hospital November 11, 1917, with history of bleeding from the left ear some weeks before. Was taken to a doctor, who told parents the child had otitis media with granulations. There was no pain. The child became rapidly worse, and a left facial paralysis and a large swelling over the mastoid became evident. There had never been any fever, but headaches, insomnia and pain over the mastoid had come on shortly before admission. On examination a little pus was seen in the left meatus along with red granulations. Complete left facial paralysis. Left mastoid tumid, but not reddened. October 15, 1917: Radical mastoid operation. Whole mastoid full of granulations and pus. All granulations removed and wound closed. Temperature rose in the next two days to a maximum of 38° C., and later returned to normal. Dressed daily with iodoform gauze. After a few days the granulations reappeared and formed a compact reddish mass. Histological examination revealed cell-elements of various types, and a diagnosis of fibro-myxo-angio-endothelioma was made. The mass was repeatedly removed, but continually grew and spread. Cachexia showed after about a month, and the child was taken home by the parents, and died on December 21, 1917. No autopsy was possible. The point of origin of the growth appears to have been in the middle ear itself. The author suggests, in view of the numerous myxomatous elements, that it had arisen from the embryonic myxomatous tissue which fills the middle ear and does not completely disappear till after birth.

J. K. Milne-Dickie.

Otitic Meningitis, with Recovery.—**Henri Aboulker** (Algiers). "Rev. de Laryngol., d'Otol., et de Rhinol." May 31, 1919.

The reporter's deductions as to the best line of treatment, from an instructive series of sixteen cases, may be thus summarised:

(1) *Septic Meningitis*.—(a) Confirmed after the mastoid operation: Incision of meninges by the mastoid route. Counter-openings in the temporal and suboccipital regions with incision of meninges. Intrathecal injections of electrargol.

(b) Confirmed before the mastoid operation. Procedure as in (1) (a), except that the radical mastoid operation is performed as the first stage of the intervention.

(2) *Aseptic Meningitis*.—(c) Confirmed after the mastoid operation: Exposure of the dura: repeated lumbar puncture with examination of the cerebro-spinal fluid. If confirmed before the mastoid operation, this should precede the other stages of the intervention.

(d) Meningitis with hypertension: If benign and transient—exposure of dura, lumbar puncture. If persistent—exposure of dura by trans-mastoid route without incision. Temporal or suboccipital trephining, incision of meninges, exploratory punctures. *H. Lawson Whale.*

Primary Diphtheria of the Middle Ear.—**Amédée Pognat** (Geneva).

"Rev. de Laryngol., d'Otol., et de Rhinol." August 15, 1919.

The primary localisation of the Klebs-Loeffler bacillus has received insufficient attention because as yet it has not become routine to make a systematic examination of the bacteriology of otorrhœa.

There is no suggestion of a hæmatogenous infection. As in other middle-ear infections, so here, it is usually the Eustachian tube which provides the portal. But—in the absence of faucial diphtheria—whence comes this infection? Presumably from the nasal fossæ. Amongst physical signs it has been noted that a bulging in one quadrant of the drum exists, but that paracentesis yields no fluid whatever. A dry tympanum is found, or (in at last one recorded case) a dry tympanum with a false membrane entirely covering the promontory.

The earache is intractable: no local or general treatment is of any avail until the pain disappears almost magically on the injection of serum.

As complications, facial paralysis and mastoiditis may occur. The prognosis rests absolutely on early diagnosis, because an early injection of serum usually ensures the subsequent integrity of hearing.

H. Lawson Whale.

Obliteration of the Lateral Sinus in Trauma of the Basis Cranii.—

Lannois and Sargnon (Lyons). "Rev. de Laryngol., d'Otol., et de Rhinol." July 31, 1919.

The technique adopted is that commonly practised by otologists in dealing with an otitic thrombosis: exposure of the sinus where the lateral passes into the sigmoid, and occlusion by a plug of ribbon gauze between dura and skull-cap. But there are two points described and argued at length which make this article worthy of perusal.

Firstly, the authors use the method as a *temporary* measure while exploring the deep regions of the neck, analogous to the use of Crile's clamps for the carotids.—[*ABS.*]. Secondly, an alternative route is discussed, namely, exposing the sinus an inch further back without

opening the antrum. It is justly argued that this point of attack robs the operator of all control of the superior petrosal sinus, which is effectively shut off by the more ordinary exposure and technique.

H. Larson Whale.

Aural Suppuration in Early Childhood: its Prevention and Treatment.—D. Guthrie. "Lancet," vol. ii, 1919, p. 429.

A useful little paper and specially to be commended from its preventive aspect. Anatomy, symptoms and aetiology are briefly discussed. Measles and adenoids are, he considers, the two principal causes of aural suppuration in young children. His scheme of treatment embraces (1) cleansing and antiseptics, which will cure the majority of cases; (2) removal of adenoids; (3) the conservative operation (modified radical), in order to conserve the hearing; (4) the radical operation, which is very seldom indicated in childhood and should only be performed in carefully selected cases.

MacLeod Yearsley.

An Original Test for the Pathologic Great-toe Sign.—Leo. M. Crafts. "Journ. Amer. Med. Assoc.," July 26, vol. lxiii, no. 4.

The test consists in making an upward stroke on the front of the ankle with a blunt point. To be clearly positive a dorsal extension of the great toe is essential. The behaviour of the other toes is variable. The author has found this test very constantly present in cases of definite organic damage to the motor tracts. He considers it second only to Babinski's in importance and more reliable than the Gordon or Oppenheim tests.

J. K. Milne Dickie.

Our Experience at Fort Oglethorpe, Ga., with Acute Affections of the Middle Ear following Measles.—Lieut.-Col. T. J. Harris. "Annals of Otology," xxviii, p. 50.

Based on 607 cases. The author notes that otological complications of measles and other infectious diseases are so unusual in their symptomatology that aural examination is the only certain means of their recognition. Also that, far outweighing all measures addressed to relieving infection of the ear, is prophylaxis to prevent such infections from developing. The means to this end are: improved sanitary measures and local treatment of the upper respiratory tract.

MacLeod Yearsley.

MISCELLANEOUS.

Some Clinical Manifestations of Influenza in Children.—L. E. La Fetra (New York). "Journ. Amer. Med. Sci.," June, 1919.

During the months October, November and December, 1918, over 900 children suffering from the influenza epidemic were treated at the Bellevue Hospital. Five types of the disease were recognised as follows: (1) Those with high fever and prostration but without physical signs of any localisation. (2) Cases with rhinitis or pharyngitis, or both. This type included the largest number of cases. The pharynx was red and glazed, often with the lymph follicles on the posterior pharyngeal wall red and swollen. Acute follicular tonsillitis was very seldom seen, but it was remarkable how slight an amount of pharyngitis could apparently be the cause of high temperatures in young children and infants, even without

swelling of the tonsils. When present, swelling of the tonsils was apt to be accompanied by enlargement of the cervical glands, and in such cases the fever usually persisted until after the swelling not only of the tonsils but of the glands had entirely disappeared. (3) Cases with tracheitis and laryngitis. Tracheitis was far more frequent than laryngitis and was often combined either with rhinitis or bronchitis. A characteristic symptom was the loud, barking, almost incessant cough, in young children frequently so severe as to be accompanied or followed by spasm of the larynx. The crowing inspiration together with the cough was suggestive of whooping cough, and was certainly due to the same mechanical condition that produces the cough in that disease, a mass of tenacious mucus at the lower part of the trachea. (4) Cases with bronchitis, the more severe of which tended to develop into broncho-pneumonia. (5) Cases with pneumonia. These constituted about 10 per cent. of all cases, and about half of them were fatal. In about four-fifths of them the lung involvement took the form of broncho-pneumonia.

Very noteworthy in this epidemic was the infrequency of otitis media and of influenza meningitis.

For the catarrhal inflammations of the upper respiratory tract, and especially for the cough of the severe tracheitis, for the laryngitis and spasm, steam inhalations with the addition of creosote were of the greatest help. Patients with broncho-pneumonia who had nasal obstruction fared much better in an atmosphere of moist warm air than by cold air treatment. The latter, however, was of advantage from the outset in cases of lobar-pneumonia without nasal obstruction.

Thomas Guthrie.

Contributions to the Pathology of Tuberculosis of the Bronchial Glands.

—E. Schmiegelow. "Acta. Oto-laryngologica," vol. i. fasc. 1, 1918.

This paper is concerned mainly with disease of the bronchial glands, especially tuberculosis, leading to rupture into a bronchus. Tracheo-bronchial stenosis due to enlargement of the bronchial glands is not very uncommon in children and may cause death by asphyxia, either as a result of the narrowing of the air-passages alone or in consequence of their blocking by rupture of an abscess. The disease is usually, but not invariably, tuberculous. In one of the cases mentioned, an infant of eight months died from respiratory obstruction, due to pressure on the lower part of the trachea by simple inflammatory enlargement of the glands, consequent upon a non-tuberculous catarrhal infection.

The diagnosis may be strongly supported by the history of the case, the physical signs in the chest and by X-ray examination, but a certain knowledge of the nature and position of the stenosis is obtained only in those cases in which it is possible to make a direct tracheo-bronchoscopic examination. Although the literature presents instances of the recovery of several patients after the spontaneous coughing up of glandular contents through the air-passages, the author has no doubt but that direct tracheo-bronchoscopic treatment is the method that promises the best result. The bronchoscope is passed either through a tracheotomy wound (in infants and young children) or per *vias naturales* (in older children and adults), and an endeavour made, as rapidly as possible, to clear the air passages of the purulent secretion and necrotic tissue by the use of forceps and suction apparatus. Two or three cases are described in which this procedure proved of great value.

Thomas Guthrie.

Some Eye and Neck Muscle Reflexes in the New-born.—R. Bárány.
"Acta Oto-laryngologica," vol. i, fasc. 1, 1918.

(a) Changes in the position of the eyes produced by changes in the body position.

Experimenting in the year 1906 on rabbits, the author found that if the head of the animal be held firmly and the body twisted round its long axis, for example, to the left, the eyes at the same time turn to the left. As the head remains fixed it is clear that this change in the eye position is due to stretching of some of the neck muscles and not to reflexes from the vestibular apparatus. The rabbit is an animal in which there occur no eye movements of optical origin. In man, in whom the principal eye movements are of optical origin, movements analogous to those in the rabbit were not to be anticipated, excepting possibly before the development of the visual apparatus, that is in new-born infants. In the latter the author found that, as he expected, these movements do in fact occur. On fixing the head of a new-born infant and turning its body round its long axis 90° to the left, both eyes moved to the left and remained in that position so long as the corresponding body-position was maintained. This reflex can only be obtained during the first two days after birth, that is, before eye movements of optical origin begin to take place.

The writer mentions also certain other movements of eyes and head observed in the new-born as a result of both optical and muscle reflexes.

(b) Examination of hearing capacity in the new-born.

The question whether the new-born hear or not has at last been settled in the affirmative by the work of Poli and Canestrini. The author has employed a simple method for demonstrating the presence of hearing in any particular case. His noise apparatus is inserted in the ear, and at the moment when the button is pressed a well-marked twitching of the eyelids is observed. This reaction was present when first looked for in about thirty new-born infants examined. As an addition to examination of the vestibular apparatus, it might be of much practical value in determining the ear condition in the offspring of deaf mute parents.

Thomas Guthrie.

Investigations Concerning Ulcus Neuroticum Mucosæ Oris.—J. Strandberg. *"Acta Oto-laryngologica,"* vol. i, fasc. 1, 1918.

This paper contains details of nine cases of the disease observed by the author, and reference to twenty-four others found by him in the literature. The disease begins as a red papule the size of a pin's head on the mucous membrane of the mouth, pharynx or larynx. After a day or two the centre is covered by a yellowish-white slough, and later there is found an ulcer $\frac{3}{4}$ cm. in diameter and sometimes $\frac{1}{2}$ cm. in depth, with sharply defined red infiltrated margin. The ulcers heal spontaneously, but the disease is characterised by repeated relapses, crops of ulcers in mild cases appearing two or three times a year, while severe cases may scarcely ever be free from them. The ulcers are very painful and are accompanied by much salivation. Excepting as a result of secondary infection there is no disturbance of the general health, nor are there any obvious changes in the internal organs or blood. The patients have usually been of markedly nervous temperament and the disease has been regarded as a trophoncrosis, an angioneurosis, or as due to some disturbance of the endocrine glands. The author is inclined to regard it

as an angioneurosis, comparable to neurotic gangrene of the skin. Histological examination of the lesions shows primary vaso-dilatation with oedema in the stratum papillare, followed by oedema and necrosis of the epithelium, with reactive inflammation of the cells of the corium. Micro-organisms are present only as a result of secondary infection.

Thomas Guthrie.

Pathology of (Mustard?) Gas Inhalation—**G. W. Covey** (Lincoln, Nebraska) and **M. Barron** (St. Paul, Minnesota). "Journ. Amer. Med. Sci.," June, 1919.

Of the thirty-seven cases included in this study the action of the gas on the respiratory tract was the main factor in causing death in thirty-four. The air passages were attacked from the tip of the epiglottis to the terminal bronchioles and air vesicles. The effects seen were due (1) to the intense irritation and escharotic action of the gas, and (2) to the secondary infection which promptly occurs. As seen in the autopsy room, more or less of the mucosa was covered by a fibropurulent exudate or false membrane, which in many cases covered the entire area from the tip of the epiglottis downward. The appearance of this membrane, both grossly and microscopically, was very similar to that usually seen in diphtheria. In addition, the clinical features were not unlike those met with in the laryngeal type of that disease. Also throat cultures often showed the presence of Klebs-Löffler bacilli, so that perplexity sometimes arose as to the differential diagnosis. In cases of longer standing the membranous exudate was less in evidence, and ulceration of the tracheal and bronchial walls was the prominent feature. A still later stage was characterised by further ulceration, necrosis and abscess formation with massive broncho-pneumonia, while attempts at healing were revealed by organisation and fibrosis.

Thomas Guthrie.

The Klebs Löffler Bacillus.—**H. Bergstrand.** "Acta Oto-laryngologica," vol. i, fasc. 1, 1918.

The writer's investigation of the morphology of the Klebs-Löffler bacillus leads him to the following conclusions:

(1) The organism is not a bacterium, but a mould belonging to the group of Fungi imperfecti. It appears to be a member of the Mucedinaceæ and of the sub-division Micronemæ.

(2) A mycelium is met with, and the hyphæ show true branching and break up into Oidia.

(3) The diphtheria bacilli are found in two forms, namely, short and thick and long and slender: both are normal and always present together, although one or other may predominate in any particular preparation. Pseudo-diphtheria bacilli show similar forms.

(4) The diphtheria bacillus cannot be distinguished by its morphological features, but only by its power to produce a specific toxin.

(5) "Involution and degeneration forms" in reality represent perfectly normal phases and are found in all cultures, whatever their age.

(6) In old cultures large, thick-walled, acid-fast forms are found, which are to be regarded as resting forms.

(7) The banded appearance of the diphtheria bacillus depends partly on division into several cells and partly on irregular concentrations of protoplasm in the cells.

(8) The idea of the so-called "variability" of the diphtheria bacillus

arises from the mistaken view of its bacterial nature. The variants are really normal members of the life-cycle of the organism.

Thomas Guthrie.

Some Unusual Cases met with in Ear, Nose and Throat Service in a Base Hospital.—S. S. Burns. "Annals of Otology," xxviii, p. 73.

These cases were: (1) Complete bilateral bony occlusion of the posterior nares. Man, aged twenty-four. Obstruction removed with chisel and heavy sphenoid punch. (2) Patent lower extremity of thyroglossal duct. Male, aged nineteen. Tract injected with methylene blue and dissected out. (3) Dermoid cyst in left post-auricular fold. Sinus injected with methylene blue and cyst dissected out. Contained hair and cartilage.

Macleod Yearsley.

The Importance of More Intimate Co-operation between the Various Specialists who see Neurosurgical Cases.—E. Sachs. "Annals of Otology," xxviii, p. 78.

The author suggests: (1) That the surgeon must have a thorough training in neurology, otology, and ophthalmology to enable him to make the diagnosis himself and outline the treatment. (2) That the neurologist conceive of the surgeon as his partner in diagnosis and call upon him whenever there is the slightest possibility that the case in point may have a surgical aspect. (3) That the rhinologist, ophthalmologist, and otologist take a greater interest in the nervous system as a whole rather than in that portion pertaining only to their specialties, and that the first two introduce the ophthalmoscope into their armamentarium. (4) That as neurological cases present so many borderline problems a society to which these various specialists belong might do much to bring us all together.

Macleod Yearsley.

Amyloid Tumours of the Upper Air-Passages.—Gordon B. New. "The Laryngoscope," June, 1919, p. 327.

Amyloid tumours of the upper air-passages are rare. They occur as part of a general amyloidosis or as a local condition. The upper air-passages are frequently involved. These tumours may be divided into three types: (1) Diffuse subepithelial infiltration; (2) tumour forming local amyloidosis; (3) amyloid degeneration of a pre-existing tumour. From a thorough review of the literature New has been able to collect but 42 cases: four new cases observed in the Mayo Clinic make 46 cases in all. (Only four cases have been found among 217 neoplasms of the larynx examined at the Mayo Clinic.) The youngest of the 46 patients was twenty years, the oldest eighty. Thirty-two patients were males. In many of the cases reported there were no local symptoms, but the condition was accidentally found at necropsy. When the larynx and trachea are involved the symptoms are such as accompany benign neoplasms of slow growth. In the diffuse infiltrating type of tumour in which the larynx and trachea are affected early hoarseness and later dyspnoea were noted.

Amyloid tumours of the upper air-passages are most common in the larynx. The clinical findings are by no means uniform. Many cases present a picture that is seen in amyloid tumours only, others one that is impossible to differentiate clinically from other benign neoplasms, gumma, or malignant growth. Local amyloidosis occurs most often in a nodular form. Multiple or single nodules may be pedunculated or sessile, but all

tend toward the rounded or oval form. The surface is usually mammillated; the tumours are quite firm when touched with a probe, and in most cases they are of a waxy yellowish-grey.

The diagnosis must be made microscopically. General amyloidosis occurs following certain chronic diseases, such as osteomyelitis, tuberculosis and syphilis. Many cases of apparently local amyloid tumours show a general pathologic condition, which may be sufficient to account for the local degenerative process. In only one of New's four cases was there an associated pathologic condition—a chronic cholecystitis. Many writers believe that the swellings should not be called tumours, as they are simply enlargements of the part, due to the deposit of the amyloid substance. The blood-vessels are especially affected. The amyloid gives the characteristic staining reaction with iodine, and shows up distinctly with hæmatoxylin and eosin.

Treatment.—In cases of localised tumours surgical removal, either by endoscopy or by thyrotomy, seems indicated. If the amyloidosis is diffuse and involves the entire circumference of larynx and trachea, removal will probably result in loss of voice and necessitate the permanent use of a tracheotomy tube. Willmann reports a case in which an amyloid tumour of the larynx entirely disappeared after two X-ray treatments. New himself employed fulguration and radium with marked improvement.

J. S. Fraser.

Surgery of the Trifacial Nerve.—John F. Barnhill. "The Laryngoscope," June, 1919, p. 342.

Surgical relief from trifacial neuralgia is not sought until medicinal means of cure have been tried and found useless. The patient is worn, and not infrequently addicted to morphine. Often the sufferer is past middle life. The patient delays seeking surgical relief because of objection to possible scars. It is advisable to adopt a technique that will insure the minimum of deformity. Many of these patients come with foul skins due to the fact that the pain resulting from the use of soap and water is so intolerable. Unusual care is therefore necessary in the sterilisation of the field of operation. The extent of surgical procedures should be governed by the nature and extent of the disease. The seat of the affection may be in the brain, in the Gasserian ganglion, in any one of the three trunks, or solely in one branch. The longer the duration and the greater the violence of the paroxysms the more apt is the affection to be located in the ganglion. It is presumed that all pathologic conditions that may be regarded as causative factors of the neuritis have previously been removed, e.g. diseased teeth or nasal sinusitis.

Extra-cranial Operations.—The branches of adjacent trunks of the trifacial apparently overlap and anastomose, much to the confusion of the surgeon. Thus certain of the terminal branches of the infraorbital, nasal and infratrochlear nerves terminate about the ala of the nose, with such intimacy that it often is extremely difficult to determine whether neuralgic pain is due to involvement of the ophthalmic, or to the superior maxillary branch.

(a) Barnhill favours surgery of the ophthalmic and its divisions at a much earlier period of the neuralgia than on the remaining divisions, because (1) of the greater probability of failure to relieve or cure by injection methods; (2) almost no deformity should result; (3) of the comparative ease with which the several branches may be dealt with. If all branches are involved the incision should follow the supra-orbital

margin from the junction of the outer and middle thirds well down upon the bridge of the nose. The orbital structures are held downward by means of a flat retractor. The supra-orbital and supra-trochlear branches are readily isolated for a distance into the orbit: the deepest portions are then caught in artery forceps and twisted out by the Thiersch method. Barnhill has devised the following plan for the easy successful avulsion of the nasal nerve: cut through the periosteum from the root of the nose to the lower end of the nasal bone, and cautiously detach the periosteum toward the apex of the orbit until the anterior ethmoidal foramen is reached. The nasal nerve will readily be found entering this foramen. With a wide retractor the orbital contents are dislocated outwardly and downwardly, putting the nerve on the stretch sufficiently to enable one to grasp it with an artery clamp. The periosteum at the point of penetration of the nerve is incised, the nerve loosened, and the whole is then easily twisted out deeply enough to include the infratrochlear branch.

(b) *The Superior Maxillary Nerve.*—Barnhill does not favour neurectomy at the infraorbital foramen. Good results can be expected only when enough of the trunk has been extracted to include the anterior and posterior dental branches and the branches to the spheno-palatine ganglion. This means that the trunk must be severed at, near, or in the foramen. Barnhill makes use of reflected light, and advocates the Kocher incision for the exposure of the infraorbital foramen. The soft structures are retracted upwards to the sharp edge of the orbit, and the periosteum is incised along the entire length of the infraorbital margin. The periosteum of the entire orbital floor is lifted, and the orbital contents retracted upwards with a broad-bladed spatula. Gauze packing is used to arrest the oozing of blood. While waiting for the bleeding to cease the infra-orbital nerve is loosened external to the foramen, and a stout silk thread is tied about it. The terminal branches are cut upon the face, and the roof of the infraorbital canal is chipped away by means of a V-shaped chisel throughout its entire length, thus permitting the nerve to be lifted free from the canal back into the spheno-maxillary fissure. With the nerve held taut as a guide, and with the apex of the orbit lighted from the head mirror, it may be followed through the fissure, grasped deeply by an artery forceps, and twisted away to the foramen rotundum. The trans-orbital operation has the very great advantage of not opening the maxillary antrum—an event which is almost certain to be followed by troublesome infection.

(c) *The Inframaxillary Division.*—Neuralgia of this nerve is rarer, and it is easier to differentiate any affected branch, so that relief is more likely to follow the extraction of the nerve superficially. When the inferior dental branch is solely involved the nerve is best extracted through the mouth. External methods are necessary if the foramen ovale is to be reached. Because of the certainty of facial palsy, operations that require incisions to the bone over the external surface of the mandible should not be considered, except in extreme cases. Incisions which follow the lower and posterior margin of the jaw result in less deformity, and are preferable in lean patients, but in the robust the operations of Kocher or Kroenlein are necessary.

Intracranial Operations.—Many now believe that the surgery of the trifacial nerve should be wholly intracranial. For operation on the Gasserian ganglion Barnhill prefers the technique of Frazier. The aim of the operator now is seldom to remove the Gasserian ganglion, because section of the sensory root of the ganglion is the best procedure.

J. S. Fraser.

Blood Examinations in the Surgery of the Nose and Throat.—Seymour Oppenheimer and Mark J. Gottlieb. "The Laryngoscope," July, 1919, p. 400.

The writers call attention to references in the literature to cases of severe or even fatal hæmorrhage following operations upon the nose and throat, and emphasise the great importance of blood examinations preliminary to operative work. The usual method of calculating the coagulation time of the blood does not give us a fair index comparable with that which obtains after an operation. After a surgical procedure the blood exudes over cut tissues, and gains the action of the thromboplastic substances from these cut tissues in addition to those produced by the disintegration of blood-platelets and blood-cells. To diagnose hæmophilia the writers claim to have adopted a method which is most serviceable in relation to nose and throat surgery. The skin is punctured with a needle having a knife edge and the blood is sucked into a 0.2 c.c. pipette, such as is used in serological work. The blood is allowed to flow to about the centre of the pipette, which is then placed in the thermostat at 37° C. and observed every two minutes. From time to time a small drop of blood is blown on to a glass slide to determine whether coagulation has started. When coagulation is complete it is very difficult to blow the blood from the pipette. With this method the coagulation time was estimated in over 400 cases, the average time being 6.3 minutes; the most prolonged coagulation time was 29 minutes and the shortest was 1½ minutes. A series of several cases having a delayed coagulation time were prepared successfully for operation by the administration of large doses of calcium lactate.

To exclude purpura, in which the bleeding time is prolonged and the coagulation time is normal, the bleeding time is determined by noting the time when the skin is pierced and observing how long bleeding occurs by gently squeezing the part from time to time. The average time was 5 minutes, the longest bleeding time 29 minutes, and the shortest 2 minutes. Hæmophilia and purpura demand especial attention, for if they are not recognised before operation they may jeopardise the patient's life. Where either the bleeding or coagulation time varied much beyond the limits of normality, operation was not undertaken without preliminary preparation to improve the blood condition. If this was not successfully accomplished a refusal to operate was emphatically made.

Occasionally the bleeding time may be shortened by administration of large doses of human serum on diphtheria antitoxin.

J. S. Fraser.

A Definite Solution of the Stammering Problem.—Ernest Tompkins. "The Laryngoscope," July, 1919, p. 409.

Tompkins agrees with Kenyon that no constant or characteristic anatomical imperfection of the cerebral, nervous or peripheral organs related to speech is known to be present, and further, that except for the effect resulting from the stammering, the stammerer does not differ in character from other people. Kenyon believes stammering finds its inciting cause in the social emotion present. The social emotion is much augmented by the embarrassment resulting from the peripheral phenomena.

Home Treatment.—The child should be made to understand that stammering will not be tolerated, that it may decline to answer questions—

in short, that it has no speech responsibility. If it can write, it should be required to carry a pad and pencil and use them if necessary. The mere act of reaching for them will generally supply sufficient distraction to release the normal speech. Even a child with considerable inclination to stammer will be practically fluent when with another child and distracted by amusement.

School Treatment.—The universal feature of school treatment will be prohibition of stammering on school property. The afflicted pupils are freed from all speech requirements. The stammering pupil should be required to carry at all times a pad and pencil, so that he may write instead of stammer. Very young pupils may recite and read in concert until they learn to write.

J. S. Fraser.

Naso-Pharyngeal Conditions, tending to prolong Meningococcus Carriage.

—**JAMES W. BABCOCK.** "The Laryngoscope," August, 1919, p. 486.

Reasoning from the facts found in the somewhat similar condition of "diphtheria carriage," the tonsils and adenoids were suspected as being the probable "dug-out" of the meningococci. The germ is readily destroyed by even a comparatively feeble disinfectant could the latter get at it. Other factors worthy of consideration are—irregularities in the septum, diseased teeth, diseased accessory sinuses. No attempts were made to correct septal deformities for fear that meningitis would be incited. Conclusions: (1) A group of very resistant meningococcus carriers showed a high incidence of abnormalities in their nose and pharynx, particularly the presence of adenoids. (2) The folds and depressions of adenoids make an ideal protection from disinfectants to meningococci at their depths. (3) The correction of diseased conditions of the nose and throat were of considerable aid in eliminating meningococci from chronic carriers.

J. S. Fraser.

LIST OF ORIGINAL PAPERS.

Rev. de Laryngol., d'Otol., et de Rhinol., June 15, 1919. (Abstracted by H. LAWSON WHALE.)

ROY, J. N.—"Syphilis among the African Blacks."

June 30, 1919.

CHEVAL, VICTOR.—"Physiology of the Eighth Nerve: Hearing and Equilibration."

BRINDEL, A.—"Two Cases of Labyrinthine Fistula."

September 15, 1919.

TRÉTRÔP.—"Transverse Gun-shot Wound of the Face, from one Ear to the Other."

LAURENS, PAUL.—"Closure of Mastoid Fistulae after Operation."

The Laryngoscope, May, 1919, vol. xxix, No. 5. (Abstracted by J. S. FRASER.)

WRIGHT, JONATHAN.—"Modern Commentaries on Hippocrates: The Physiology and Pathology of the Nose and Throat," p. 295.

June, 1919, vol. xxix, No. 6.

GATEWOOD, LAWRENCE (New York City).—"A Simple, Safe and Rapid Tonsil Enucleation Technic for Local or General Anaesthesia," p. 366.

FISHER, L. F. (Philadelphia).—"Practical Value of Ear Studies," p. 374.

WHITE, F. W. (U.S.A.).—"Foreign Body in the Esophagus," p. 379.

July, 1919, vol. xxix, No. 7.

NEW, G. B. (Rochester, Minn.).—"Rhínophyma," p. 391.

LEVARG, J. J. (New York City).—"Voice and Vocal Projection," p. 419.

KAHN, A. (New York City).—"A Brain Abscess Drain," p. 430.

August, 1919, vol. xxix, No. 8.

CARTER, W. W. (New York City).—"Correction of Nasal Deformities by the Implantation of Bone; Improved Technique," p. 476.

KERRISON, P. D. (New York City).—"History of an Obscure Case of Intracranial Infection with Autopsy Findings," p. 480.

REVIEWS.

The Medical Annual: A Year Book of Treatment, and Practitioner's Index for 1919 (thirty-seventh year). Pp. 675. Bristol: John Wright & Sons, Ltd. London: Simpkin, Marshall, Hamilton, Kent & Co., Ltd.

This year's *Medical Annual* is so full of articles of engrossing interest to every medical man that it is most difficult for the specialist to confine himself to the critical study of the sections apportioned to his own particular department without being led away to those devoted to other aspects of the medical art. Hence many liftings-up and layings-down of the volume with consequent delay in completing its consideration.

The sections on ear disease have, as before, been entrusted to Dr. J. S. Fraser, of Edinburgh, and he has supplied them with his usual thoroughness and judgment. Notable among them are those on tumours of the acoustic nerve, otosclerosis, war aspects of ear disease, Wrightson's new theory of hearing, oto-typhoid and many others, all treated in Mr. Fraser's conscientious manner.

The throat and nose are this year dealt with by Dr. Watson-Williams, and his contributions have a fresh value from the development and further maturation of his views since he last undertook this share in the Annual. The industry, energy and judgment displayed by him in this year's volume have provided us with what is practically an exhaustive *exposé* of the most modern laryngology and rhínology. Needless to say his enthusiasm for the exploration of the accessory sinuses of the nose is still at the highest pitch, but it does not render him any the less keen in dealing with the other regions. He gives a number of beautiful illustrations of views obtained by means of the "endo-rhínoscope" as perfected by Holmes. These are most convincing, but it has to be remembered that they are "composite," and that the "compounder" has to be free from previous bias in using this fascinating instrument. It is indispensable in those cases in which the soft palate is adherent to the posterior wall of the pharynx. Moreover, it is very useful to those who are not very dexterous in the use of the posterior mirror, as also for the dexterous if a recalcitrant pharynx threatens to take up more of the time of the examiner than he is justified in spending. It is sometimes difficult to get sufficient light without rendering the lampholder unpleasantly hot. Lamps seem to vary in this respect.

War injuries of the larynx, as observed by Mr. Harman, make an interesting and still opportune contribution. The lingual tonsil is recalled from its unmerited neglect and is accorded quite ample consideration. The relations of tonsils to hæmorrhage, tuberculosis and general

diseases receive full consideration, each year appearing to supply fresh observations in regard to these questions.

Mr. Foster Moore abstracts, from the ophthalmologist's point of view, papers by Leon White on loss of sight (retro-bulbar neuritis) from posterior accessory sinus disease, and Sydney Stephenson on acute anterior ethmoiditis in young subjects. Neither of these subjects has escaped notice in the Laryngological Section of the Royal Society of Medicine, but they are worthy of further consideration and these papers are well deserving of study.

In general medicine and surgery this Annual seems almost to beat its own record for variety and interest. An examination paper set on this issue of the Annual would afford an ideal test of the up-to-dateness of any practitioner.

Dundas Grant.

Injuries to the Head and Neck. By LAWSON WHALE, M.D., F.R.C.S., with Preface by Col. F. F. BURGHARD, C.B., M.D., M.S., F.R.C.S. London: Baillière, Tindall & Cox. Price 15s. net.

Mr. Whale has succeeded in writing a book which will prove useful and instructive, not only to those who are still treating war injuries, but also to the general surgeon and specialist engaged in civil practice.

The author never allows himself to forget the important rôle played by cavities and mucous membranes. He shows clearly that the severity of a wound generally depends, not on its superficial extent, but on the harm done to structures which are out of sight. A careful record has been kept of many interesting cases, and some of the deductions and conclusions will be most helpful.

The advance made by Mr. Whale, and others working along the same lines, has added an entirely new and a very important chapter to surgery.

The book is well illustrated and there are many interesting photographs, bearing testimony to the skill of the author as a plastic surgeon.

Norman Patterson.

Some Questions of Phonetic Theory. Chapter V: The Perception of Sound.

By WILFRID PERRETT. Reader in German in the University of London. Cambridge: W. Heffer & Sons, Ltd., 1919. Price 2s.

This seems to be an effort to prove from phonetics that the Helmholtz theory of cochlear function is unsound, while that of Sir Thomas Wright is in harmony with the facts.

Mr. Perrett's style, however, is so facetious and so remotely allusive that it is difficult to follow his argument, and impossible to express an opinion upon its worth.

Dan McKenzie.

NOTES AND QUERIES.

OTOLOGICAL SECTION OF THE ROYAL SOCIETY OF MEDICINE.

The next meeting of this Section will be held on January 16, 1920. Secretaries: Mr. H. Buckland Jones and Mr. Lionel Colledge.

LARYNGOLOGICAL SECTION OF THE ROYAL SOCIETY OF MEDICINE.

The next meeting of this Section will be held on February 6, 1920. Secretaries: Dr. Irwin Moore and Mr. Charles W. Hope.

THE SCOTTISH OTOLOGICAL AND LARYNGOLOGICAL SOCIETY.

The next meeting of this Society will be held in the Western Infirmary, Glasgow, on Saturday, December 13, 1919, at 3 p.m. Secretary: Dr. W. S. Syme.

BOOK RECEIVED.

University of Iowa Studies: Studies in Medicine. Vol. i, No. 5.

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